CHEVROLET

1975 CHEVROLET

LIGHT DUTY TRUCK

SERVICE and OVERHAUL MANUAL SUPPLEMENT

ST 330-75

IMPORTANT SAFETY NOTICE

Proper service and repair is important to the safe, reliable operation of all motor vehicles. The service procedures recommended by Chevrolet and described in this service manual are effective methods for performing service operations. Some of these service operations require the use of tools specially designed for the purpose. The special tools should be used when and as recommended.

It is important to note that some warnings against the use of specific service methods that can damage the vehicle or render it unsafe are stated in this service manual. It is also important to understand these warnings are not exhaustive. Chevrolet could not possibly know, evaluate and advise the service trade of all conceivable ways in which service might be done or of the possible hazardous consequences of each way. Consequently, Chevrolet has not undertaken any such broad evaluation. Accordingly, anyone who uses a service procedure or tool which is not recommended by Chevrolet must first satisfy himself thoroughly that neither his safety nor vehicle safety will be jeopardized by the service method he selects.

1975
10-30 SERIES TRUCK CHASSIS SERVICE and OVERHAUL MANUAL SUPPLEMENT

FOREWORD

This manual has been prepared as a supplement to the 1974 Light Duty Truck Service and Overhaul Manuals. It covers, in separate sections, diagnosis, maintenance adjustments, service operations, and overhaul procedures for the 1975 10-30 Series truck models.

Any reference to brand names in this manual is intended merely as an example of the types of lubricants, tools, materials, etc., recommended for use. In all cases, an equivalent may be used.

All information, illustrations and specifications contained in this literature are based on the latest product information available at the time of publication approval. The right is reserved to make changes at any time without notice.

SERVICE SECTION

The Service Section of this manual includes new or revised procedures for maintenance and adjustments, minor service operations and replacement of components.

CHEVROLET MOTOR DIVISION

General Motors Corporation

DETROIT, MICHIGAN

SECTION INDEX

Printed in U.S.A.

SECTION 0

GENERAL INFORMATION AND LUBRICATION

CONTENTS OF THIS SECTION

GENERAL INFORMATION

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MODEL LINE UP

The 10 through 30 Series truck model line-up for 1975 consists of the models shown in the Charts in this section.

Truck Model Identification

All 10-30 series models are identified by this model system. Basically the designation consists of 7 characters, 2 letters followed by five numbers. The first letter indicates a Chevrolet model and the second identifies the chassis type. The first number designates the GVW range, the second and third identify the cab-to-axle dimension or model type and the last two identify the cab or body style.

VEHICLE IDENTIFICATION NUMBER AND RATING PLATE

A combination vehicle identification number and rating plate used on all models (fig. 1) is located on the left door pillar of CK models. On Forward Control models (except P30 Motor Home Chassis) it is attached to the dash and toe panel.

The vehicle identification number stamped on the plate decodes into the information shown in Figure 2.

ENGINE NUMBER

The engine number indicates manufacturing plant, month and day of manufacture, and transmission type. A typical engine number would be F1210TFA, which would breakdown thus:

F - Manufacturing Plant (F-Flint, T-Tonawanda)

12 - Month of Manufacture (December)

10 - Day of Manufacture (tenth)

T - Truck

FA - Transmission and engine type

UNIT AND SERIAL NUMBER LOCATIONS

For the convenience of service technicians and engineers when writing up certain business papers such as Warranty Reports, Product Information Reports, or reporting product failures in any way, the location of the various unit numbers have been indicated. These unit numbers and their prefix or suffix are necessary on these papers for various reasons - such as accounting, follow-up on production, etc.

The prefixes on certain units identify the plant in which the unit was manufactured and thereby permits proper follow-up of the plant involved to get corrections made when necessary.

Always include the prefix in the number.

Axles

- Series 10, 20 and P30 Code is stamped on Front of Right Rear Axle Tube Inboard of Upper Control Arm Bracket.
- Series CG30 (except dual wheel) code is stamped at the Forward Upper Surface of Carrier.
- Dual Wheel Part Number and Production Code is stamped on Front of Right Axle Tube.

TRUCK MODEL IDENTIFICATION

C C 10703

1. CHEVROLET
2. CHASSIS TYPE
3. GVW RANGE
4. CA DIMENSION/MODEL TYPE
5. CAB OR BODY STYLE

② CHASSIS TYPE

C—Conventional 4 x 2

G—Forward Control 4 x 2 (Body-Frame Integral)

K—Conventional 4 x 4 (Four Wheel Drive)

P—Forward Control 4 x 2 (Conventional)

③ GVW RANGE

1—4500 to 7150

2—5500 to 8200

3—6200 to 14,000

④ CA DIMENSION/MODEL TYPE

05—BLAZER

07—42"

08—FC or Motor Home Chassis

09—56"

10—60"/FC Chassis, Chevy Van, Sportvan

11—Motor Home Chassis

13—Chevy Van, Sportvan, Cutaway Van

14—84"/FC or Motor Home Chassis

⑤ CAB OR BODY STYLE

03—Conventional Cab (C-K models)

04—Cutaway Van (G models)

05—Chevy Van

06—Suburban/Sportvan with Panel Rear Doors

14—Blazer

32—Motor Home Chassis

42—Forward Control Chassis

63—Crew Cab

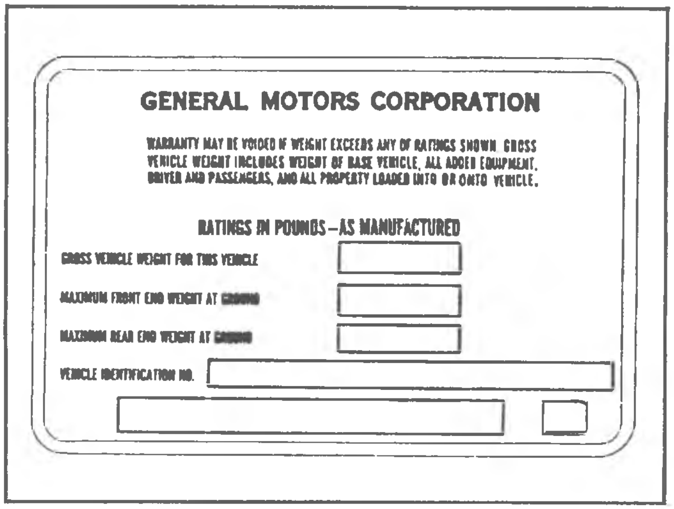

Fig. 1—Vehicle Identification Number and Rating Plate Information

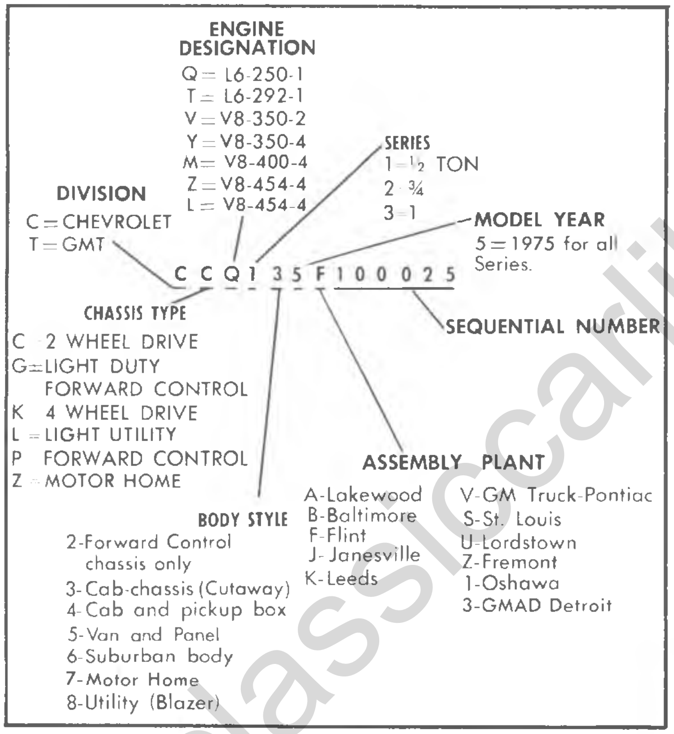

Fig. 2—Vehicle Identification Number

Transmissions

- 3-Speed Transmission Unit Number Located on Lower Left Side of Case Adjacent to Rear of Cover.
- 4-Speed Transmission Unit Number Stamped on Rear of Case, Above Output.
- Turbo Hydra-Matic 350 Transmission Unit Number Located on Right Rear Vertical Surface of Oil Pan.

•The Turbo Hydra-Matic Transmission 400 Serial Number is Located on the Light Blue Plate on the Right Side of the Transmission.

Engines

- 6-Cylinder Engine Unit Number Located on Pad at Right Hand Side of Cylinder Block at Rear of Distributor.
- 8-Cylinder Engine Unit Number Located on Pad at Front, Right Hand Side of Cylinder Block.

Delcotrons

Delcotron Unit Serial Number Located at Top of Rear Housing.

Batteries

Battery Code Number Located on Cell Cover Top of Battery.

Starters

Starter Serial Number and Production Date Stamped on Outer Case, Toward Rear.

SERVICE PARTS IDENTIFICATION PLATE

The Service Parts Identification Plate (fig. 3) is provided on all Truck models. On most series it will be located on the inside of the glove box door, or, on Forward Control series, it will be located on an inner body panel. The plate lists the vehicle serial number, wheelbase, and all Production options or Special Equipment on the vehicle when it was shipped from the factory including paint information. **ALWAYS REFER TO THIS INFORMATION WHEN ORDERING PARTS.**

KEYS AND LOCKS

Two keys are provided with each vehicle. Different lock cylinders operated by a separate key are available as an option for the sliding side load door and rear load doors.

EMERGENCY STARTING

- Engines in vehicles with automatic transmissions cannot be started by pushing or towing the vehicle.
- Never tow or push trucks equipped with light duty emission control systems to start engine.

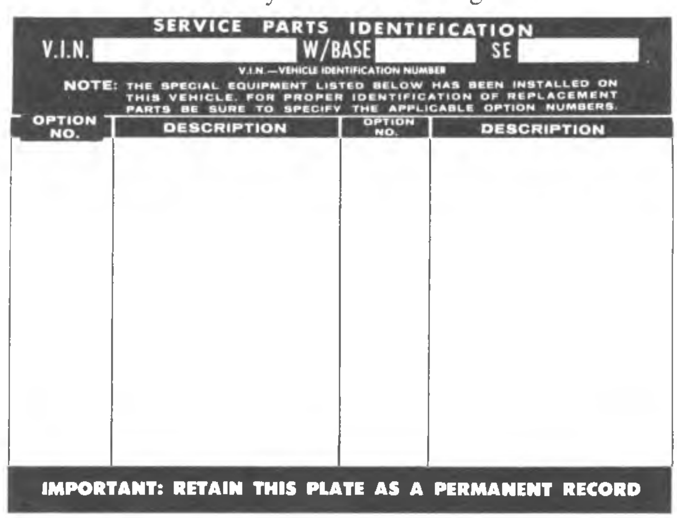

Fig. 3—Service Parts Identification Plate

- A vehicle with a discharged battery may be started by transferring electrical power from a battery in another car - called "jump starting".

Jump Starting

CAUTION: *The following jump start procedure is for use only under the following conditions. Departures from these conditions and procedures, could result in: (1) serious personal injury (particularly to eyes) or property damage from such things as battery explosion, battery acid or electrical burns, or (2) damage to electronic components in either vehicle. If all the conditions cannot be met, or if you are uncertain about them, we strongly recommend for your safety and that of your vehicle that you leave the starting to a competent mechanic.*

- The battery in the other vehicle must be of the *same nominal voltage,* 12 volts, and must be *negatively grounded.* [All General Motors cars, light trucks (10,000 GVWR and under), and motor homes use 12-volt, negatively grounded electrical systems and *can* be used to jump start one another.] The nominal voltage and grounding of the other vehicle's battery may be determined by checking the specifications in its owner's manual. Use of a booster battery of a higher nominal voltage, or which is positively grounded may result in serious personal injury or property damage.
- The battery in your vehicle must be a Delco battery (the original or a replacement) which is *equipped with flame arrestor type filler/vent caps* on *all* filler openings, or a sealed-type battery which does not have filler openings or caps. Each flame arrestor cap contains a grey disc rather than a small hole. To help avoid serious injury or property damage, this jump start procedure should not be used if one or more of the flame arrestor caps is missing, or if they are not present on a replacement battery. (If your vehicle contains a replacement battery other than a Delco, refer to jump starting instructions provided by the manufacturer of the other battery.)

CAUTION: *Never expose battery to open flame or electric spark—battery action generates hydrogen gas which is flammable and explosive. Don't allow battery fluid to contact eyes, skin, fabrics, or painted surfaces—fluid is a corrosive sulfuric solution which could cause serious personal injury or property damage. Flush any contacted area immediately with water. Wear eye protection such as industrial safety spectacles or goggles when working on or near battery. Remove rings, metal watch bands and other metal jewelry before jump starting or working around a battery. Be careful in using metal tools and equipment. If such metal should contact the positive battery terminal (or metal in contact with it) and any other metal on the vehicle, a short circuit may occur which would cause personal injury. Batteries and battery acid should always be kept out of reach of children.*

TO JUMP START:

1. Position the two vehicles so they are NOT touching. Set parking brake firmly and place automatic transmission in "PARK" (neutral for manual transmission) in each vehicle. Also turn off lights, heater and all other unnecessary electrical loads.
2. Remove the vent caps from the battery in the other vehicle (unless it is also equipped with Delco flame arrestor caps). Lay a cloth over the open vent wells. These two actions help reduce the explosion hazard always present in a battery when connecting "live" booster batteries to "dead" batteries. For safety's sake, do not remove any of the flame arrestor vent caps from a Delco battery.
3. Attach one end of one jumper cable to the positive terminal (identified by a red color, "+" or "P" on the battery case, post or clamp) of the battery in the other vehicle, and the other end of the same cable to the positive terminal of your battery.
4. Attach one end of the remaining jumper cable FIRST to the negative terminal (black color, "–" or "N") of the battery in the other vehicle, and THEN the other end of the same cable to the negative terminal of your battery in this vehicle. Take care that clamps from one cable do not inadvertently touch the clamps on the other cable. Do not lean over the battery when making this connection.
5. Start the engine in the vehicle that is providing the jump start (if it was not running). Let run a few minutes, then start the engine in the vehicle with the discharged battery.
6. Reverse the above sequence exactly when removing the jumper cables. Reinstall vent caps and dispose in a safe manner of any cloths used to cover vent wells, as the cloths may have corrosive acid on them.

PUSH STARTING - TRUCKS WITH HEAVY DUTY EMISSION CONTROL SYSTEMS

CAUTION: *Trucks equipped with light duty emission control systems must not be pushed or towed to start.*

If your truck is equipped with a manual 3-speed or 4-speed transmission, it can be started in an emergency by pushing. When being pushed to start the engine, turn off all unnecessary electrical loads, turn ignition to "ON", depress the clutch pedal and place the shift lever in high gear. Release the clutch pedal when speed reaches 10 to 15 miles per hour. Bumpers and other parts contacted by the pushing vehicle should be protected from damage during pushing. Never tow the truck to start.

TOWING

All Except Four Wheel Drive Trucks

Normally your vehicle may be towed with all four wheels on the ground for distances up to 50 miles at speeds of less than 35 MPH. The engine should be off and the transmission in neutral.

However, the rear wheels must be raised off the ground or the drive shaft disconnected when the transmission is not operating properly or when a speed of 35 MPH or distance of 50 miles will be exceeded.

> **CAUTION:** *If a truck is towed on its front wheels only, the steering wheel must be secured with the wheels in a straight ahead position.*

Four Wheel Drive Trucks

It is recommended that the truck be towed with the front wheels off the ground. The truck can be towed, however, with the rear wheels off the ground if there is damage in the rear wheel area. In this event, the transmission selector lever should be placed in the "N" (neutral) position and with conventional four wheel drive the front drive disengaged. With Full Time four wheel drive the transfer case should be in high. Towing speeds should not exceed 35 MPH for distances up to 50 miles. If truck is towed on its front wheels, the steering wheel should be secured to keep the front wheels in a straight-ahead position.

When towing the vehicle at slow speeds (approx. 20 MPH), for a very short distance only, the transmission must be in NEUTRAL and with conventional four wheel drive the transfer case MUST be in "TWO WHEEL HIGH". With Full Time four wheel drive the transfer case should be in high.

When towing the vehicle at faster speeds for greater distances, the following steps MUST be taken:

- If front wheels are on the road, disconnect the front drive shaft.
- If rear wheels are on the road, disconnect the rear drive shaft.

STEEL TUBING REPLACEMENT

In the event that replacement of steel tubing is required on brake line, fuel line, evaporative emission, and transmission cooling lines, only the recommended steel replacement tubing should be used.

Only special steel tubing should be used to replace brake line. That is, a double wrapped and brazed steel tubing meeting G.M. Specification 123 M. Further, any other steel tubing should be replaced only with the released steel tubing or its equivalent. Under no condition should copper or aluminum tubing be used to replace steel tubing. Those materials do not have satisfactory fatigue durability to withstand normal vehicle vibrations.

All steel tubing should be flared using the upset (double lap) flare method which is detailed in Section 5 of this Manual.

VEHICLE LOADING

Vehicle loading must be controlled so weights do not exceed the numbers shown on the Vehicle Identification Number and Rating Plate for the vehicle.

A typical example of a truck in a loaded condition is shown in Figure 4. Note that the axle or GVW capabilities are not exceeded.

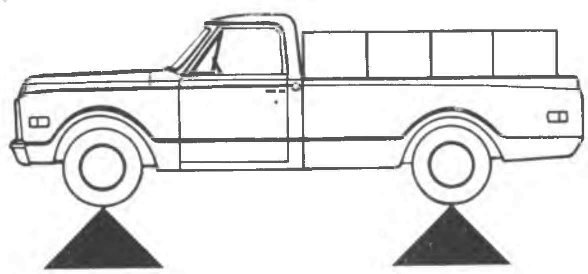

Fig. 4—Typical Vehicle Loaded Condition

LUBRICATION

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MAINTENANCE SCHEDULE

A separate maintenance folder has been provided with each vehicle which contains a complete schedule and brief explanation of the safety, emission control, lubrication and general maintenance it requires. The maintenance folder information is supplemented by this section of this manual, as well as the separate vehicle and emissions warranty booklet also furnished with each vehicle. Read all three publications for a full understanding of vehicle maintenance requirements.

The time or mileage intervals for lubrication and maintenance services outlined in this section are intended as a general guide for establishing regular maintenance and lubrication periods for trucks with light duty emission control systems (see chart). Sustained heavy duty and high speed operation or operation under adverse conditions may require more frequent servicing.

For maintenance and lubrication information on trucks designated with heavy duty emission control systems, continue to refer to Section 0 of the 1974 Light Duty Truck Shop Manual.

CHEVROLET LIGHT AND HEAVY DUTY EMISSION CLASS VEHICLES

Light Duty:
- C10 (exc. Suburban V-8 & 6200# GVW L-6 or V-8)
- K10 - L6 Only
- G10 - All

Heavy Duty Vehicle:
- C10 - Suburban V-8
- C10 - 6200# GVW L-6 or V-8
- K10 - V-8 Only
- C20, 30 - All
- K20 - All
- P10, 20, 30 - All
- G20, 30 - All

ENGINE

Oil and Filter Recommendations

The letter designation "SE" has been established to correspond with the requirements of GM 6136-M. "SE" engine oils will be better quality and perform better than those identified with "SA" through "SD" designations and are recommended for all light-duty gasoline trucks regardless of model year and previous engine oil quality recommendations.

Oil Change Period

- Use only SE engine oil.
- Change oil each 6 months or 7,500 miles. If more than 7,500 miles are driven in a 6 month period, change oil each 7,500 miles.
- Change oil each 3 months or 3,000 miles, whichever occurs first, under the following conditions:

  –Driving in dusty conditions.

  –Trailer pulling or camper use.

  –Frequent long runs at high speeds and high ambient temperatures.

  –Motor Home use.

  –Stop and go type service such as delivery trucks, etc.

  –Extensive idling.

  –Short-trip operation at freezing temperatures (engine not thoroughly warmed-up).
- Operation in dust storms may require an immediate oil change.
- Replace the oil filter at the first oil change, and every second oil change thereafter. AC oil filters provide excellent engine protection.

The above recommendations apply to the first change as well as subsequent oil changes. The oil change interval for the engine is based on the use of SE oils and quality oil filters. Oil change intervals longer than those listed above will seriously reduce engine life and may affect the manufacturer's obligation under the provisions of the New Vehicle Warranty.

A high quality SE oil was installed in the engine at the factory. It is not necessary to change this factory-installed oil prior to the recommended normal change period. However, check the oil level more frequently during the break-in period since higher oil consumption is normal until the piston rings become seated.

NOTE: Non-detergent and other low quality oils are specifically not recommended.

Oil Filter Type and Capacity

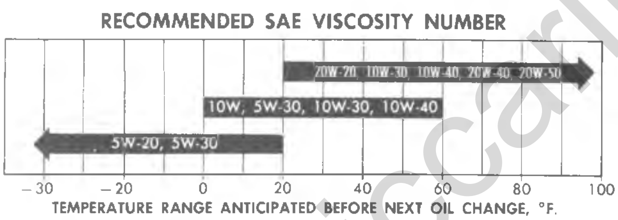
- Throwaway type, 1 quart U.S. measure, .75 quart Imperial measure.
- 250 cu. in., 292 cu. in., AC Type PF-25. 350 cu. in. 454 cu. in., AC Type PF-35.

Crankcase Capacity (Does Not Include Filter)

- **292 L6 Engine; 5 quarts U.S. measure, 4.25 quarts Imperial measure.**
- All other engines; 4 quarts U.S. measure, 3.25 quarts Imperial measure.

Recommended Viscosity

Select the proper oil viscosity from the following chart:



NOTE: SAE 5W-20 oils are not recommended for sustained high-speed driving. SAE 30 oils may be used at temperatures above 40°F. SAE 5W-30 oils are recommended for all seasons in vehicles normally operated in Canada.

The proper oil viscosity helps assure good cold and hot starting.

Checking Oil Level

The engine oil should be maintained at proper level. The best time to check it is before operating the engine or as the last step in a fuel stop. This will allow the oil accumulation in the engine to drain back in the crankcase. To check the level, remove the oil gauge rod (dipstick), wipe it clean and reinsert it firmly for an accurate reading. The oil gauge rod is marked "FULL" and "ADD OIL". If the oil is at or below the "ADD" mark on the dipstick, oil should be added as necessary. The oil level should be maintained in the safety margin, neither going above the "FULL" line nor below "ADD OIL" line.

NOTE: The oil gauge rod is also marked "Use SE Engine Oil" as a reminder to use only SE oils.

Supplemental Engine Oil Additives

The regular use of supplemental additives is specifically not recommended and will increase operating costs. However, supplemental additives are available that can effectively and economically solve certain specific problems without causing other difficulties. For example, if higher detergency is required to reduce varnish and sludge deposits resulting from some unusual operational difficulty, a thoroughly tested and approved additive - "Super Engine Oil Supplement" - is available.

Drive Belts

Drive belts should be checked every 7,500 miles or 6 months for proper tension. A loose belt will affect water pump and generator operation.

POSITIVE CRANKCASE VENTILATION VALVE

Every 30,000 miles or 24 months the valve should be replaced. Connecting hoses, fittings and flame arrestor should be cleaned. At every oil change the system should be tested for proper function and serviced, if necessary. (Also see maintenance schedule at end of this section.)

AIR INJECTION REACTOR SYSTEM (A.I.R.) CONTROLLED COMBUSTION SYSTEM (C.C.S.)

The Air Injection Reactor system should have the drive belt inspected for wear and tension every 24 months or 30,000 miles, whichever occurs first. In addition, complete effectiveness of either system, as well as full power and performance, depends upon idle speed, ignition timing, and idle fuel mixture being set according to specification. A quality tune-up which includes these adjustments should be performed periodically to assure normal engine efficiency, operation and performance.

GM EVAPORATION CONTROL SYSTEM

Every 24 months or 30,000 miles (more often under dusty conditions) the filter in the base of the canister must be replaced and the canister inspected.

MANIFOLD HEAT CONTROL VALVE

First 7,500 miles or 6 months check valve for freedom of operation. If valve shaft is sticking, free it up with GM Manifold Heat Control Solvent or its equivalent.

AIR CLEANER

CAUTION: *Do not remove the engine air cleaner unless temporary removal is necessary during repair or maintenance of the vehicle. When the air cleaner is removed backfiring can cause fire in the engine compartment.*

NOTE: Under prolonged dusty driving conditions, it is recommended that these operations be performed more often.

Oil Wetted Paper Element Type

L-6 engine, replace every 15,000 miles. V-8 engine, every 15,000 miles inspect inspect element for dust leaks, holes or other damage. Replace if necessary. If satisfactory, rotate element 180° from originally installed position. Replace at 30,000 miles. Element must not be washed, oiled, tapped or cleaned with an air hose.

Crankcase Ventilation Filter (Located Within Air Cleaner)

If so equipped, inspect every oil change and replace if necessary. Replace at least every 30,000 miles; more often under dusty driving conditions.

FUEL FILTER

Replace filter element located in carburetor inlet every 12 months or 15,000 miles whichever occurs first, or, if an in-line filter is also used, every 30,000 miles. Replace in-line filter every 30,000 miles.

GOVERNOR

The attaching bolts should be kept tight, the optionally available governor should be kept clean externally and the filter element should be replaced every 15,000 miles.

ACCELERATOR LINKAGE

Lubricate with engine oil every 30,000 miles as follows:

1. On V8 engine, lubricate the ball stud at the carburetor lever.
2. On L6 engine, lubricate the two ball studs at the carburetor lever and lubricate the lever mounting stud. Do not lubricate the accelerator cable.

AUTOMATIC TRANSMISSION FLUID RECOMMENDATION

Use only automatic transmission fluids identified with the mark DEXRON® II (or equivalent).

Check the fluid level at each engine oil change period. To make an accurate fluid level check:

1. Drive vehicle several miles, making frequent starts and stops, to bring transmission up to normal operating temperature (approximately 180-190®F).
2. Park vehicle on a level surface.
3. Place selector lever in "Park" and leave engine running.
4. Remove dipstick and wipe clean.
5. Reinsert dipstick until cap seats.
6. Remove dipstick and note reading.

If oil level is at or below the ADD mark on the dipstick, oil should be added as necessary. One pint raises the level from ADD to FULL. Do not overfill.

Under normal driving conditions, the transmission fluid should be changed every 30,000 miles. If the vehicle is driven extensively in heavy city traffic during hot weather, or is used to pull a trailer, change fluid every 15,000 miles. Likewise, operators of trucks in commercial use where the engine idles for long periods, should change fluid every 15,000 miles.

To Change Turbo Hydra-Matic 400 and Turbo Hydra-Matic 350 fluid, remove fluid from the transmission sump, add approximately 7.5 pints U.S. measure (6.25 pints Imperial measure) for the Turbo Hydra-Matic 400 and 2 1/2 qts. U.S. measure (2 qts. Imperial measure) for the Turbo Hydra-Matic 350 of fresh fluid, to return level to proper mark on the dipstick.

Every 30,000 Miles—the Turbo Hydra-Matic 400 transmission sump filter should be replaced.

3-AND 4-SPEED MANUAL TRANMISSION LUBRICANT

Every 6 months or 7,500 miles, whichever occurs first, check lubricant level and add lubricant, if necessary, to fill to lvel of filler plug hole with SAE 80W or SAE 80W-90 GL-5 Gear Lubricant. If temperatures below +32°F are expected, use SAE 80W GL-5 Gear Lubricant only. For those vehicles normally operated in Canada, use SAE 80W GL-5 Gear Lubricant only.

TRANSMISSION SHIFT LINKAGE (MANUAL AND AUTOMATIC)

Every 7,500 miles or 6 months-lubricate shift linkage and, on Manual transmission floor control, lever contacting faces with water resistant EP chassis lubricant which meets General Motors Specification GM6031-M.

Clutch

The clutch pedal free travel should be checked at regular intervals.

Lubricate the clutch cross-shaft at fitting (on Series 10 Forward Control models also lubricate the clutch linkage idler lever at fitting) every 7,500 miles or 6 months with water resistant EP chassis lubricant which meets General Motors Specification GM 6031-M.

REAR AXLES

Standard

Every 6 months or 7,500 miles, whichever occurs first, check lubricant level and add lubricant, if necessary, to fill to level of filler plug hole. Use SAE 80W or SAE 80W-90 GL-5 Gear Lubricant. For those vehicles normally operated in Canada, use SAE 80W GL-5 Gear Lubricant.

Positive Locking or Positraction

Every 6 months or 7,500 miles, whichever occurs first, check lubricant level and add lubricant, if necessary, to fill to level of filler plug hole.

Drain and refill at first 15,000 miles then maintain same as standard axle but, use only the special positraction differential lubricant available at your authorized Chevrolet dealer.

PROPELLER SHAFT SLIP JOINTS

Propeller shaft slip joints should be lubricated every 7,500 miles or 6 months with water resistant EP chassis lubricant which meets General Motors Specification GM 6031-M.

UNIVERSAL JOINTS

All universal joints are the needle bearing type. Lubricate those universal joints (depending on truck model) equipped with lube fittings every 7,500 miles or 6 months with water resistant EP chassis lubricant which meets General Motors Specification GM 6031-M. More frequent lubes may be required on heavy duty or "Off the Road" operations.

WHEEL BEARINGS

Front

NOTE: Use wheel bearing lubricant GM Part No. 1051344 or equivalent. This is a premium high melting point lubricant which meets all requirements of General Motors Specification GM 6031M.

Due to the weight of the tire and wheel assembly it is recommended that they be removed from hub before lubricating bearings to prevent damage to oil seal. Then remove the front wheel hub to lubricate the bearings. The bearings should be thoroughly cleaned before repacking with lubricant.

Front wheels are equipped with tapered roller bearings on all trucks. Wheel bearings should be lubricated every 30,000 miles. Do not mix wheel bearing lubricants.

CAUTION: *"Long fibre" type greases should not be used on roller bearing front wheels.*

Rear

The rear wheel bearings receive their lubrication from the rear axle. When installing bearings which have been cleaned, prelube with wheel bearing grease.

BRAKE MASTER CYLINDER

Check master cylinder fluid level in both reservoirs every 7,500 miles or 6 months. If the fluid is low in the reservoir, it should be filled to a point about 1/4" from the top rear of each reservoir with Delco Supreme No. 11 Hydraulic Brake Fluid or equivalent.

BRAKE AND CLUTCH PEDAL SPRINGS

Lubricate brake and clutch pedal springs every 7,500 miles or 6 months with engine oil for all models.

PARKING BRAKE

Every 7,500 miles or 6 months clean and lubricate all parking brake pivot points with water resistant EP chassis lubricant which meets General Motors Specification GM 6031-M.

STEERING

Manual Steering Gear

The steering gear is factory-filled with steering gear lubricant. Seasonal change of this lubricant should not be performed and the housing should not be drained-no lubrication is required for life of the steering gear.

Every 30,000 miles, the gear should be inspected for seal leakage (actual solid grease-not just oily film). If a seal is replaced or the gear is overhauled, the gear housing should be refilled with No. 1051052 (13 oz. container) Steering Gear Lubricant which meets GM Specification GM4673-M or its equivalent.

NOTE: Do not use EP Chassis Lube, which meets GM Specification GM 6031-M, to lubricate the gear. DO NOT OVER-FILL the gear housing.

Power Steering System

Check the fluid level in the pump reservoir at each oil change period. Add GM Power Steering Fluid or DEXRON® II automatic Transmission Fluid) or equivalent as necessary to bring level into proper range on filler cap indicator depending upon fluid temperature.

If at operating temperature (approximately 150°F—hot to the touch), fluid should be between "HOT" and "COLD" marks.

If at room temperature (approximately 70°F), fluid should be between "ADD" and "COLD" marks. Fluid does not require periodic changing.

STEERING LINKAGE AND SUSPENSION

Maintain correct front end alignment to provide easy steering, longer tire life, and driving stability.

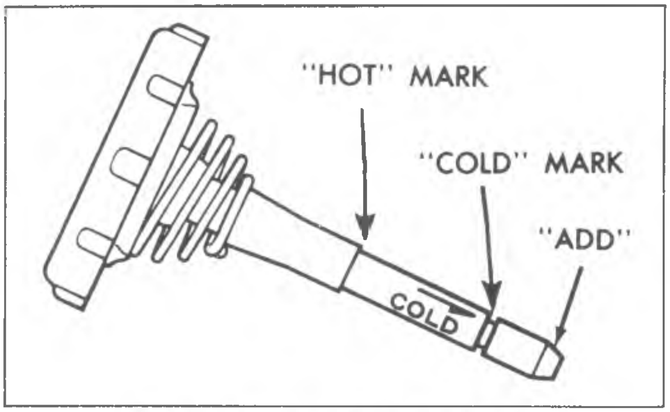


Fig. 5—Power Steering Filler Cap Indicator

Check control arm bushings and ball joints for wear.

Lubricate tie rods, upper and lower control arms, and ball joints at fittings with water resistant EP chassis lubricant which meets General Motors Specification GM 6031-M every 7,500 miles or 6 months.

Lubricate every 3,000 miles or 3 months whichever occurs first under the following conditions:

- Driving in dusty or muddy conditions.
- Extensive off-road use.

NOTE: Ball joints must be at +10°F. or more before lubricating.

Keep spring to axle U bolts and shackle bolts properly tightened (see Specifications Section for torque recommendations). Check U bolt nuts after the first 1,000 miles of operation if the U bolt or U bolt nuts are changed in service.

HOOD LATCH AND HOOD HINGE

Every 7,500 miles or 6 months, whichever occurs first, lubricate hood latch assembly and hood hinge assembly as follows:

1. Wipe off any accumulation of dirt or containimation on latch parts.
2. Apply lubriplate or equivalent to latch pilot bolt and latch locking plate.
3. Apply light engine oil to all pivot points in release mechanism, as well as primary and secondary latch mechanisms.
4. Lubricate hood hinges.
5. Make hood hinge and latch mechanism functional check to assure the assembly is working correctly.

BODY LUBRICATION

Normal use of a truck causes metal-to-metal movement at certain points in the cab or body. Noise, wear and improper operation at these points will result when a protective film of lubricant is not provided.

For exposed surfaces, such as door checks, door lock bolts, lock striker plates, dovetail bumper wedges, etc. apply a thin film of light engine oil.

Where oil holes are provided in body parts a dripless oil can be safely used, but any lubricant should be used sparingly, and after application all excess should be carefully wiped off.

The seat adjusters and seat track, ordinarily overlooked, should be lubricated with water resistant EP chassis lubricant which meets General Motors Specification GM 6031-M.

There are other points on bodies which may occasionally require lubrication and which are difficult to service. window regulators and controls are confined in the space between the upholstery and the outside door panel. Easy access to the working parts may be made by removing the trim. Door weatherstrips and rubber hood bumpers should be lightly coated with a rubber lubricant.

UNDERBODY MAINTENANCE

The effects of salt and other corrosive materials used for ice and snow removal and dust control can result in accelerated rusting and deterioration of underbody components such as brake or pan, exhaust system, brackets, parking brake cables. These corrosive effects, however, can be reduced by periodic flushing of the underbody with plain water. In geographic areas having a heavy concentration of such corrosive materials, it is recommended that the complete underbody be inspected and flushed at least once a year, preferably after a winter's exposure. Particular attention should be given to cleaning out underbody members where dirt and other foreign materials may have collected.

FOUR WHEEL DRIVE

Most lubrication recommendations and procedures for 4 wheel drive-equipped trucks are the same for corresponding components of conventional drive trucks.

In addition, the following items require lubrication at the intervals mentioned.

Propeller Shaft Centering Ball

A centering ball at the transfer case end of the front propeller shaft on Four Wheel Drive Models should be lubricated every 7,500 miles with water resistant EP chassis lubricant which meets General Motors Specification GM 6031-M. More frequent lubrication may be required on heavy duty off the road operations.

NOTE: A special needle nose grease gun adapter for flush type grease fitting is required to lubricate the centering ball.

Front Axle

The front axle should be checked every 7,500 miles or 6 months and refilled with SAE 80W-90 GL-5 Gear Lubricant when necessary. With the differential at operating temperature, fill to the level of filler plug hole.

If differential is cold, fill to level of 1/2" below the filler plug hole.

For vehicles normally operated in Canada use SAE 80W GL-5 Gear Lubricant.

Air Vent Hoses

Check vent hose at front axle and at transfer case for kinks and proper installation every 7,500 miles or 6 months.

Transfer Case

Check the transfer case level every 7,500 miles or 6 months and, if necessary, add lubricant as follows:

Conventional Four Wheel Drive

Add SAE 80W or SAE 80W-90 GL-5 Gear Lubricant to bring to level of filler plug hole.

Full Time Four Wheel Drive

Add SAE 10W-30 or SAE 10W-40 engine oil to bring to level 1/2" below filler plug hole.

Control lever and Linkage

Since no grease fitting is provided in the control ever it is necessary to brush or spray engine oil on the lever pivot point and on all exposed control linkage every 7,500 miles 6 months.

SPEEDOMETER ADAPTER

On vehicles so equipped, lubricate adapter at fitting with water resistant EP chassis grease which meets General Motors Specification GM 6031-M every 7,500 miles.

COMPLETE VEHICLE MAINTENANCE SCHEDULE

When To Perform Services (Months or Miles, Whichever Occurs First)	Item No.	Services (For Details, See Numbered Paragraphs)
Every 6 Months or 7,500 Miles	1	*Chassis Lubrication
	2	•*Fluid Levels Check
	3	*Engine Oil Change
At 1st Oil Chg. - Then Every 2nd	4	*Oil Filter Change
See Explanation	5	Tire Rotation (Steel Belted Radial)
	6	Rear Axle Lube Change
Every 12 Months	7	Air Conditioning Check
Every 12 Months or 15,000 Miles	8	*Cooling System Check
		— Coolant Change & Hose Replacement
Every 30,000 Miles	9	Wheel Bearing Repack
	10	*Auto. Trans. Fluid & Filter Change
	11	Manual Steering Gear Check
	12	Clutch Cross Shaft Lubrication
Every 6 Months or 7,500 Miles	13	Owner Safety Checks
	14	Tire and Wheel Inspection
	15	*Exhaust System Check
	16	*Drive Belt Check
		*— Belt Replacement
	17	Suspension and Steering Check
	18	Brake and Power Steering Check
Every 12 Months or 15,000 Miles	19	Drum Brake and Parking Brake Check
	20	Throttle Linkage Check
	21	Underbody Flush & Check
	22	Bumper Check
At First 6 Months or 7,500 Miles - Then at 18 Month/ 22,500 Mile Intervals	23	Thermo. Controlled Air Cleaner Check
	24	Carburetor Choke Check
	25	Engine Idle Speed Adjustment
	26	EFE Valve Check
	27	Carburetor Mounting Torque
Every 12 Months or 15,000 Miles	28	Fuel Filter Replacement
	29	Vacuum Advance System & Hoses Check
	30	PCV System Check
		— PCV Valve & Filter Replacement
Every 18 Months or 22,500 Miles	31	Idle Stop Solenoid Check
	32	Spark Plug Wires Check
Every 22,500 Miles	33	Spark Plug Replacement
	34	Engine Timing Adjustment & Dist. Check
Every 24 Months or 30,000 Miles	35	ECS System Check & Filter Replacement
	36	Fuel Cap, Tank and Lines Check
Every 30,000 Miles	37	Air Cleaner Element Replacement

• Also A Safety Service

* Also An Emission Control Service

EXPLANATION OF COMPLETE VEHICLE MAINTENANCE SCHEDULE

Presented below is a brief explanation of each of the services listed in the preceding Complete Vehicle Maintenance Schedule.

Vehicle operation under conditions such as heavy dust, continuous short trips, use of other than unleaded or low lead fuels or pulling trailers, is not considered normal use and therefore more frequent maintenance will be required. Such additional maintenance requirements are included where applicable. Refer to the appropriate section of this manual for additional details on specific services. A listing of recommended lubricants and fluids is included at the end of this listing.

LUBE AND GENERAL MAINTENANCE

1. CHASSIS**-Lubricate all grease fittings in front suspension and steering linkage. Also lubricate transmission shift linkage, hood latch, hood hinges, and parking brake cable guides and linkage, clutch linkage, propeller shaft slip joint, universal joints and brake and clutch pedal springs. Lubricate suspension and steering linkage every 3 months or 3,000 miles when operating under dusty or muddy conditions and in extensive off-road use. (See elsewhere in this section for additional services required on four wheel drive models.)
2. **FLUID LEVELS**–Check level of fluid in brake master cylinder*, power steering pump*, battery, engine**, axle, transmission** and windshield washer*. Engine coolant should be checked for proper level and freeze protection to at least –20°F or to the lowest temperature expected during the period of vehicle operation.** Proper engine coolant also provides corrosion protection.

Any significant fluid loss in any of these systems or units could mean that a malfunction is developing and corrective action should be taken immediately. A low fluid level in the brake master cylinder front reservoir could also be an indicator that the disc brake pads need replacing.

3. **ENGINE OIL****–Change each 6 months or 7,500 miles, whichever occurs first under normal driving conditions, or each 3 months or 3,000 miles when the vehicle is operated under the following conditions: (a) driving in dusty conditions, (b) trailer pulling, (c) extensive idling or (d) short-trip operation at freezing temperatures (with engine not thoroughly warmed-up). See elsewhere in this section for additional details on engine oil.
4. **ENGINE OIL FITLER****–Replace at the first oil change and every other oil change thereafter.
5. **TIRES**–Steel belted radial tires should be rotated at first 7,500 miles and then at every 15,000 miles thereafter. Bias-belted tires should be rotated every 7,500 miles. To equalize wear, rotate tires as illustrated in Section 10 of this manual and adjust tire pressures as shown on Tire Inflation Table in Section 10 of this manual.
6. **REAR AXLE**–Change lubricant at first 15,000 miles on positraction axles. Change lubricant every 7,500 miles on all type rear axles or final drives when using vehicle to pull a trailer.
7. **AIR CONDITIONING**–Check condition of air conditioning system hoses and refrigerant charge at sight glass (if so equipped). Replace hoses and/or refrigerant if need is indicated.
8. **COOLING SYSTEM****–12 month or 15,000-mile intervals, wash radiator cap and filler neck with clean water, pressure test system and radiator cap for proper pressure holding capacity, (tighten hose clamps and inspect condition of all cooling and heater hoses). Replace hoses every 24 months or 30,000 miles, or earlier if checked, swollen or otherwise deteriorated.

Also each 12 months or 15,000 miles, clean exterior of radiator core and air conditioning condenser. Every 24 months or 30,000 miles, drain, flush, and refill the cooling system with a new coolant solution.

9. **WHEEL BEARINGS**–Clean and repack front wheel bearings with a lubricant as specified in the "Recommended Fluids and Lubricants" chart in this section.
10. **AUTOMATIC TRANSMISSION FLUID****–Under normal driving conditions, change the transmission fluid and service the sump filter every 30,000 miles.

Under unusual conditions such as constant driving in heavy city traffic, trailer pulling, and commercial applications, services should be performed at 15,000 mile intervals. See elsewhere in this manual for further details on transmission care.

11. **MANUAL STEERING GEAR**–Check for seal leakage around the pitman arm and housing. If leakage is evident (solid grease oozing out-not just oily film), it should be corrected immediately.
12. **CLUTCH CROSS SHAFT**–Lubricate clutch cross shaft lever.

SAFETY MAINTENANCE

NOTE: Items a thru u can be checked by the owner, while Items 14 thru 22 should only be checked by a qualified mechanic. It is particularly important that any safety systems which may have been adversely affected in an accident be checked and repaired as necessary before the vehicle is returned to use.

* Also a Safety Service

** Also an Emission Control Service

13. **SAFETY CHECKS TO BE PERFORMED BY OWNER**—The following checks should be made regularly during operation at no greater interval than 6 months or 7,500 miles, whichever occurs first, and more often when the need is indicated. Any deficiencies should be brought to the attention of your dealer or another service outlet, as soon as possible, so the advice of a qualified mechanic is available regarding the need for repairs or replacements.

(a) **STEERING COLUMN LOCK**—Check for proper operation by attempting to turn key to **LOCK** position in the various transmission gears with car stationary. Key should turn to **LOCK** position only when transmission control is in **PARK** on automatic transmission models or in reverse on manual transmission models. Key should be removable only in **LOCK** position.

(b) **PARKING BRAKE AND TRANSMISSION "PARK" MECHANISM**—Check parking brake holding ability by parking on a fairly steep hill and restraining the vehicle with the parking brake only. On vehicles with automatic transmissions, check the holding ability of the **"PARK"** mechanism by releasing all brakes after the transmission selector lever has been placed in the "P" position.

CAUTION: *Before making the two checks below, be sure to have a clear distance ahead and behind the car, set the parking brake and firmly apply the foot brake. Do not depress accelerator pedal. Be prepared to turn off ignition switch immediately if engine should start.*

(c) **STARTER SAFETY SWITCH (AUTOMATIC TRANSMISSION VEHICLES)**—Check starter safety switch by attempting to start the engine with the transmission in each of the driving gears. The starter should operate only in the Park ("P") or Neutral ("N") positions.

(d) **STARTER, SAFETY SWITCH (MANUAL TRANSMISSION VEHICLES)**—To check, place the shift lever in neutral, depress the clutch halfway, and attempt to start. The starter should operate only when clutch is fully depressed.

(e) **TRANSMISSION SHIFT INDICATOR**—Check to be sure automatic transmission shift indicator accurately indicates the shift position selected.

(f) **STEERING**—Be alert to any changes in steering action. The need for inspection or servicing may be indicated by "hard" steering, excessive free play or unusual sounds when turning or parking.

(g) **WHEEL ALIGNMENT AND BALANCE**—In addition to uneven or abnormal tire wear, the need for wheel alignment service may be indicated by a pull to the right or left when driving on a straight and level road. The need for wheel balancing is usually indicated by a vibration he steering wheel or seat while driving at normal highway speeds.

(h) **BRAKES**—Be alert to illumination of the brake warning light or changes in braking action, such as repeated pulling to one side, unusual sounds either when braking or between brake applications, or increased brake pedal travel. Any of these could indicate the need for brake system inspection and/or service.

(i) **EXHAUST SYSTEM**—Be alert to any change in the sound of the exhaust system or a smell of fumes which may indicate a leak.

(j) **WINDSHIELD WIPERS AND WASHERS**—Check operation of wipers, as well as condition and alignment of wiper blades. Check amount and direction of fluid sprayed by washers during use.

(k) **DEFROSTERS**—Check performance by moving controls to "DEF" and noting amount of air directed against the windshield.

(l) **REARVIEW MIRRORS AND SUN VISORS**—Check that friction joints are properly adjusted so mirrors and sun visors stay in the selected position.

(m) **HORN**—Blow the horn occasionally to be sure that it works. Check all button locations.

(n) **LAP AND SHOULDER BELTS**—Check belts, buckles, adjustable latch plates, retractors, interlock and reminder systems, guide loops, clips, and anchors for impaired operation or damage. Check to make certain that anchor mounting bolts are tight.

(o) **HEAD RESTRAINTS**—Check that head restraints, if present, adjust properly in the up detent positions, and that no components are missing, damaged or loose.

(p) **SEAT BACK LATCHES**—Check to see that seat back latches are holding by pulling forward on the top of each folding seat back (with doors closed if equipped with automatic seat back latches).

(q) **LIGHTS AND BUZZERS**—Check all instrument panel illuminating and warning lights, seat belt reminder light and buzzer, ignition key buzzer, interior lights, license plate lights, side marker lights, headlamps, parking lamps, tail lamps, brake lights, turn signals, backup lamps, and hazard warning flashers. Have headlamp aim checked every 12 months or 15,000 miles, or more often if light beams seem to be aimed improperly.

(r) **GLASS**—Check for broken, scratched, dirty or damaged glass on vehicle that could obscure vision or become an injury hazard.

(s) **DOOR LATCHES**—Check for positive closing, latching and locking.

(t) **HOOD LATCHES**—Check to make sure hood closes firmly by lifting on the hood after each closing. Check also for broken, damaged or missing parts which might prevent secure latching.

(u) **FLUID LEAKS**—Check for fuel, water, oil or other fluid leaks by observing the ground beneath the vehicle after it has been parked for a while. (Water dripping from air conditioning system after use is normal.) If gasoline fumes or fluid are noticed at any time, the cause should be determined and corrected without delay because of the possibility of fire.

14. **TIRES AND WHEELS**—To equalize wear, rotate tires as illustrated in Section 10 in this manual. Adjust tire pressures as recommended on tire placard on left front door. Check disc brake pads and conditions of rotors while wheels are removed. Check tires for excessive wear or damage. Make certain wheels are not bent or cracked and wheel nuts are tight. Check tire inflation pressure at least monthly, or more often if daily visual inspection indicates the need.

15. **EXHAUST SYSTEM****—Check complete exhaust system and nearby body areas and trunk lid for broken, damaged, missing or mispositioned parts, open seams, holes, loose connections or other deterioration which could permit exhaust fumes to seep into the trunk or passenger compartment. Dust or water in the trunk may be an indication of a problem in one of these areas. Any defects should be corrected immediately. To help insure continued integrity, exhaust system pipes and resonators rearward of the muffler must be replaced whenever a new muffler is installed.

16. **ENGINE DRIVE BELTS****—Check belts driving fan, AIR pump, Delcotron, power steering pump and air conditioning compressor for cracks, fraying, wear and tension. Adjust or replace as necessary.

It is recommended that belts be replaced every 24 months or 30,000 miles, whichever occurs first.

17. **SUSPENSION AND STEERING**—Check for damaged, loose or missing parts, or parts showing visible signs of excessive wear or lack of lubrication in front and rear suspension and steering system. Questionable parts noted should be replaced by a qualified mechanic without delay.

18. **BRAKES AND POWER STEERING**—Check lines and hoses for proper attachment, leaks, cracks, chafing, deterioration, etc. Any questionable parts noted should be replaced or repaired immediately. When abrasion or wear is evident on lines or hoses, the cause must be corrected.

19. **DRUM BRAKES AND PARKING BRAKE**—Check drum brake linings and other internal brake components at each wheel (drums, wheel cylinders, etc.). Parking brake adjustment also should be checked whenever drum brake linings are checked.

    NOTE: More frequent brake checks should be made if driving conditions and habits result in frequent brake application.

20. **THROTTLE LINKAGE**—Check for damaged or missing parts, interference or binding. Any deficiencies should be corrected without delay by a qualified mechanic.

21. **UNDERBODY** In geographic areas using a heavy concentration of road salt or other corrosive materials for snow removal or road dust control, flush and inspect the complete underside of the car at least once each year, preferably after a winter's exposure. Particular attention should be given to cleaning out underbody members where dirt and other foreign materials may have collected.

22. **BUMPERS**—Check the front and rear bumper systems at 12-month/15,000 mile intervals to be sure that impact protection and clearance originally designed into these systems remain in a state of full readiness. They also should be checked whenever there is obvious bumper misalignment, or whenever the vehicle has been involved in a significant collision in which the bumpers were struck, even when slight or no damage to the bumper systems can be seen.

EMISSION CONTROL MAINTENANCE

NOTE: Additional recommended maintenance instructions relating to vehicle use, evidence of maintenance, and service replacement parts are included in the New Vehicle Warranty Information folder.

23. **THERMOSTATICALLY CONTROLLED AIR CLEANER**—Inspect installation to make certain that all hoses and ducts are connected and correctly installed. Also check valve for proper operation.

24. **CARBURETOR CHOKE AND HOSES**—Check choke mechanism for proper operation. Any binding condition which may have developed due to petroleum gum formation on the choke shaft or from damage should be corrected. Check carburetor choke hoses for proper connection, cracking, abrasion or deterioration and correct or replace as necessary.

25. **ENGINE IDLE SPEED**—Adjust engine idle speed accurately (following the specifications shown on the label under the hood). Adjustments must be made with test equipment known to be accurate.

26. **EARLY FUEL EVAPORATION (EFE) VALVE**—Check valve for proper operation. A binding condition must be corrected. Check switch for proper

operation. Check hoses for cracking, abrasion or deterioration. Replace parts as necessary.

27. **CARBURETOR MOUNTING**—At 7,500, 22,500, and 45,000 miles, torque carburetor attaching bolts and/or nuts to compensate for compression of the gasket.

28. **FUEL FILTER**—Replace filter (in carburetor) at 15,000 mile intervals or more frequently if clogged.

29. **VACUUM ADVANCE SYSTEM AND HOSES**—Check system for proper operation and hoses for proper connection, cracking, abrasion or deterioration. Replace parts as necessary.

30. **POSITIVE CRANKCASE VENTILATION SYSTEM (PCV)**—Check the PCV system for satisfactory operation at 15,000 mile intervals, and clean filter. Replace the PCV valve at 30,000 mile intervals and blow out PCV valve hose with compressed air. Replace deteriorated hoses.

The PCV filter (located in the air cleaner) should be replaced whenever the air cleaner element is replaced.

31. **IDLE STOP SOLENOID OR DASHPOT**—Check for proper operation. An inoperative solenoid or dashpot must be replaced.

32. **SPARK PLUG WIRES**—Clean exterior of wires; remove any evidence of corrosion on end terminals. Inspect spark plug wires for evidence of checking, burning, or cracking of exterior insulation and tight fit at distributor cap and spark plugs or other deterioration. If corrosion cannot be removed or other conditions above are noted, replace wire.

33. **SPARK PLUGS**—Replace plugs at 22,500 mile intervals with type specified in Section 6 in this manual.

34. **TIMING AND DISTRIBUTION CAP**—Adjust ignition timing following the specifications shown on label under hood. Also, carefully inspect the interior and exterior of the distributor cap and rotor for cracks, carbon tracking and terminal corrosion. Clean or replace as necessary.

35. **EVAPORATION CONTROL SYSTEM (ECS)**—Check all fuel and vapor lines and hoses for proper connections and correct routing as well as condition. Remove canister and check for cracks or damage. Replace damaged or deteriorated parts as necessary. Replace filter in lower section of canister.

36. **FUEL CAP, FUEL LINES AND FUEL TANK**—Inspect the fuel tank, cap and lines for damage which could cause leakage. Inspect fuel cap for correct sealing ability and indications of physical damage. Replace any damaged or malfunctioning parts.

37. **AIR CLEANER ELEMENT**—Replace the engine air cleaner element under normal operating conditions every 30,000 miles on V-8 engines and L-6 engines. Operation of vehicle in dusty areas will necessitate more frequent replacements.

CAUTION: *Do not operate the engine without the air cleaner unless temporary removal is necessary during repair or maintenance of the vehicle. When the air cleaner is removed, backfiring can cause fire in the engine compartment.*

RECOMMENDED FLUIDS & LUBRICANTS

USAGE	FLUID/LUBRICANT
Power steering system and pump reservoir	GM power steering fluid Part No. 1050017 or equivalent — if not available use DEXRON®-II automatic transmission fluid
Differential — standard	GL-5 gear lubricant SAE-80W or SAE-80W-90 (80W in Canada)
Differential — Positraction	Lubricant GM Part No. 1051022 or equivalent
Manual steering gear	Lubricant GM Part No. 1051052 or equivalent
Manual transmission	GL-5 gear lubricant SAE-80W or SAE-80W-90 (80W in Canada)
Brake system and master cylinder	Delco Supreme No. 11 fluid or DOT-3
Clutch linkage (Man. trans. only)	
a. Pivot points	Engine oil
b. Push rod to clutch fork joint, and cross shaft pressure fitting	Chassis grease meeting requirements of GM 6031-M
Manual transmission shift linkage, column shift	Engine oil
Shift linkage, floor shift	Engine oil
Hood Latch assembly	
a. Pivots and spring anchor	Engine oil
b. Release pawl	Chassis grease

USAGE	FLUID/LUBRICANT
Hood hinges	Engine oil
Automatic transmission shift linkage	Engine oil
Chassis lubrication	Chassis grease meeting requirements of GM 6031-M
Automatic transmission	DEXRON®-II automatic transmission fluid
Parking brake cables	Chassis grease
Front wheel bearings	Chassis grease meeting requirements of GM 6031-M
Body door hinge pins, station wagon tailgate hinge and linkage, station wagon folding seat, rear compartment lid hinges.	Engine Oil
Windshield washer solvent	GM Optikleen washer solvent Part No. 1050001 or equivalent
Energizer (Battery)	Colorless, odorless drinking water
Engine coolant	Mixture of water and a high quality Ethylene Glycol base type anti-freeze conforming to GM Spec. 1899-M

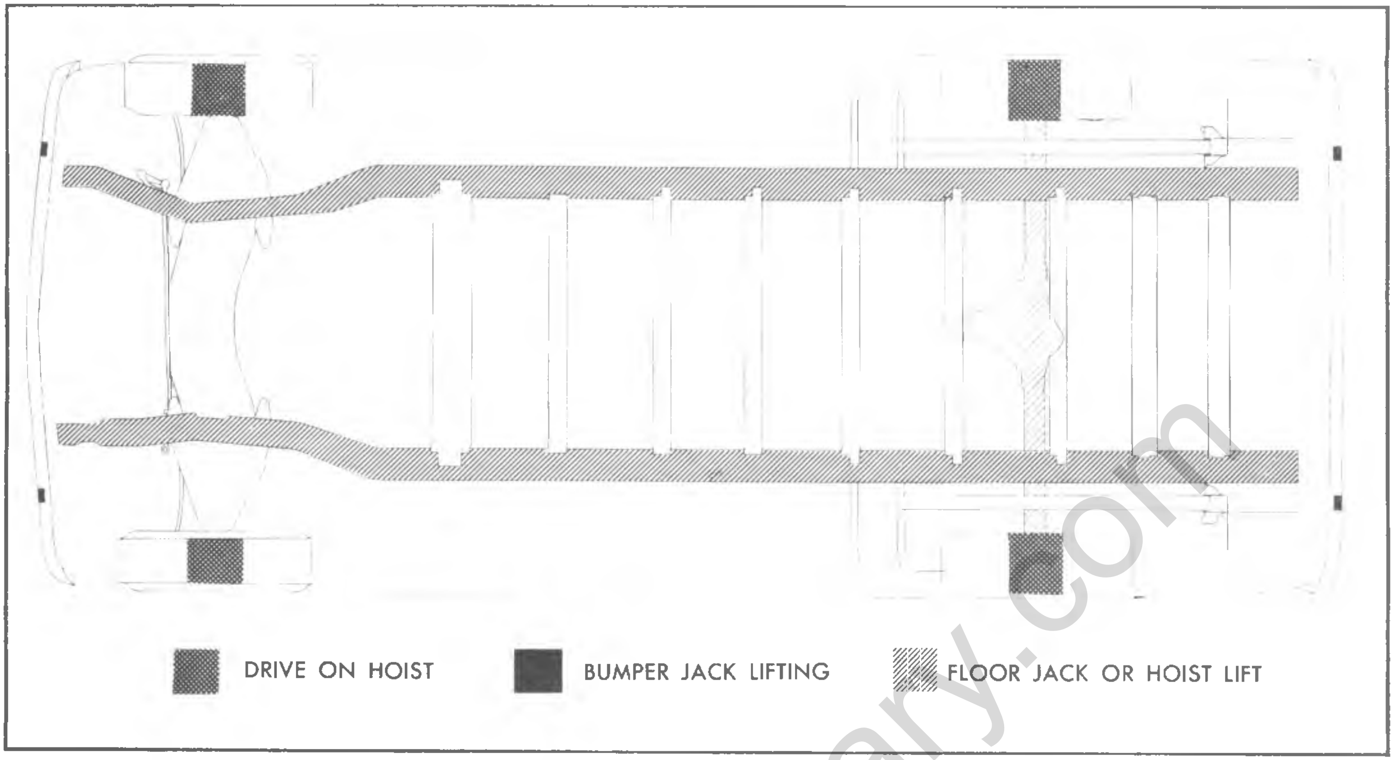
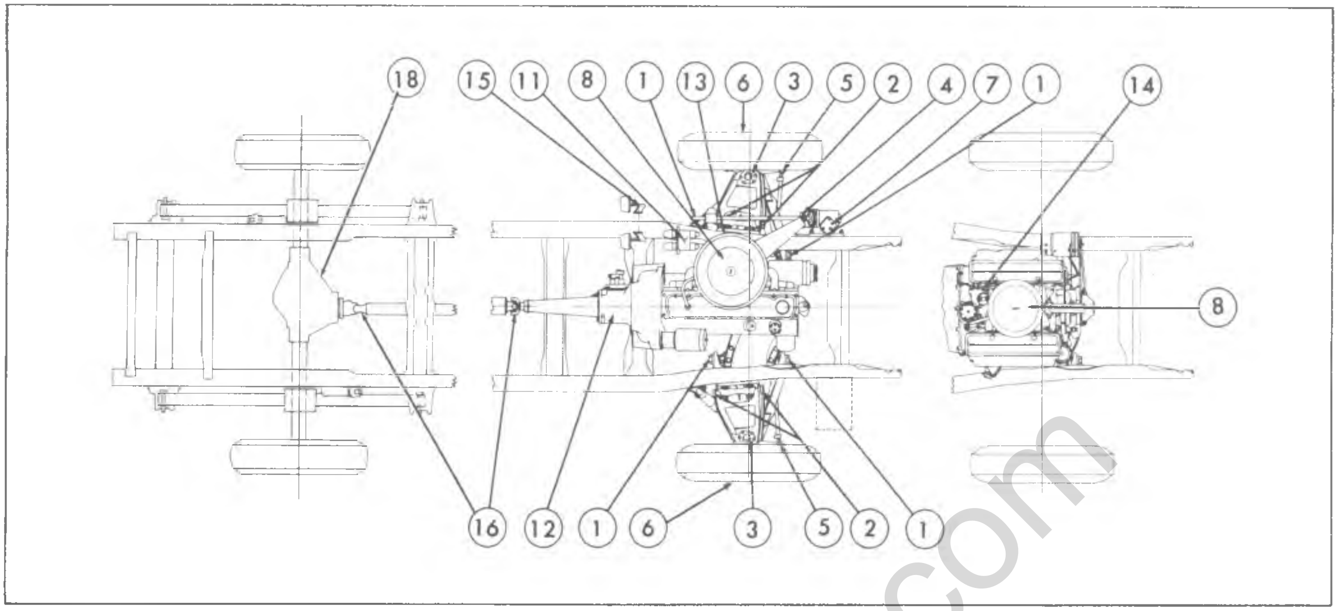
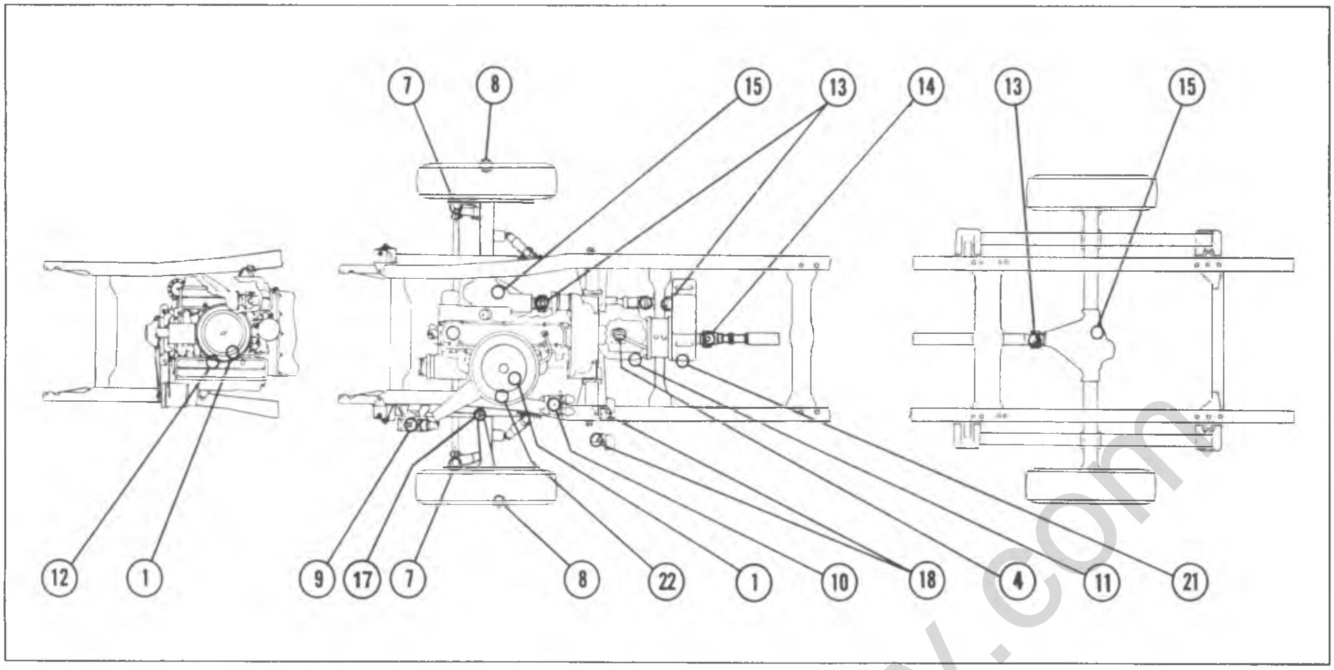


Fig. 6—G Model Lifting Points



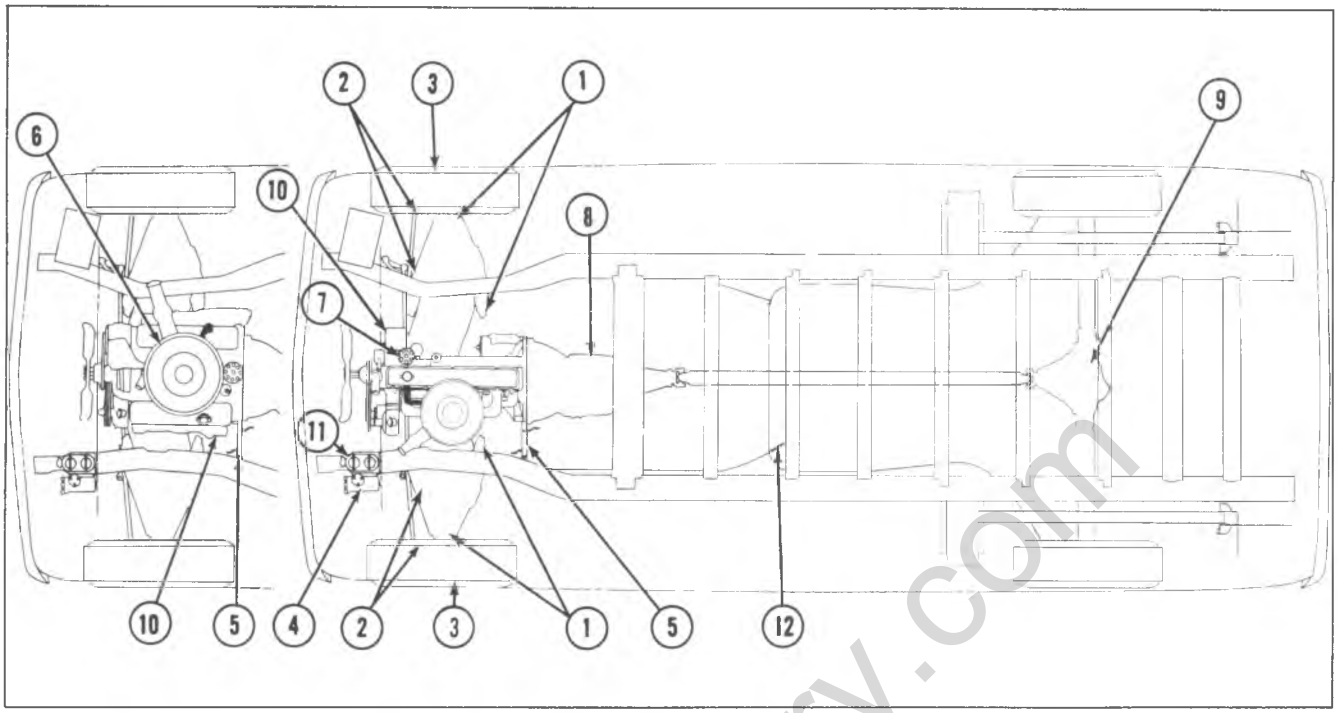
No.	Lubrication Points	Lubrication Period	Type of Lubrication	Quantity	Remarks
1	Lower Control Arms	7,500 Miles	Chassis Lubricant	4 places as required	
2	Upper Control Arms	7,500 Miles	Chassis Lubricant	4 places as required	
3	Upper and Lower Control Arm Ball Joints	7,500 Miles	Chassis Lubricant	4 places as required	
4	Intermediate Steering Shaft (PA10)	7,500 Miles	Chassis Lubricant	2 places as required	
5	Tie Rod Ends	7,500 Miles	Chassis Lubricant	4 places as required	
6	Wheel Bearings	30,000 Miles	Whl. Brg. Lubricant	2 places as required	
7	Steering Gear	30,000 Miles			Check for Grease Leak— Do not Lubricate
8	Air Cleaner — Element	15,000 Miles			See Vehicle Maintance Schedule
11	Master Cylinder	7,500 Miles	Delco Supreme No. 11 or DOT-3 fluids	As required	Check — add fluid when necessary
12	Transmission — Manual — Automatic	7,500 Miles 7,500 Miles	GL-5 Dexron® -II or equivalent	As required As required	Keep even w/filler plug. See Lubrication Section
13	Throttle Bell Crank — L-6	7,500 Miles	Engine Oil	As required	
14	Carburetor Linkage — V-8	7,500 Miles	Engine Oil	As required	
15	Brake and Clutch Pedal Springs	7,500 Miles	Engine Oil	As required	
16	Universal Joints	7,500 Miles	Chassis Lubricant	As required	
17	Propeller Shaft Slip Joint	7,500 Miles	Chassis Lubricant	As required	Not shown
18	Rear Axle	7,500 Miles	GL-5	As required	Check See Lubrication section

Fig. 7—Lubrication - Conventional and Forward Control Models



No.	Lubrication Points	Lubrication Period	Type of Lubrication	Quantity	Remarks
1	Air Cleaner	15,000 Miles			See Vehicle Maintenance Schedule
4	Control Linkage Points	15,000 Miles	Engine Oil	As required	Brush or Spray to apply
7	Tie Rod Ends	7,500 Miles	Chassis Lubricant	2 places as required	
8	Wheel Bearings	30,000 Miles	Wheel Bearing Grease	2 places as required	
9	Steering Gear	30,000 Miles			Check for Grease Leak Do not Lubricate
10	Master Cylinder	7,500 Miles	Delco Supreme No.11 or DOT-3 fluids	As required	Check – add fluid when necessary
11	Transmission – Manual – Automatic	7,500 Miles 7,500 Miles	GL-5 Dexron®-II or equivalent	As required As required	Keep even w/filler plug See Lubrication Section
12	Carburetor Linkage – V-8	7,500 Miles	Engine Oil	As required	
13	Universal Joints	7,500 Miles	Chassis Lubricant	As required	See Lubrication Section
14	Propeller Shaft Slip Joints	7,500 Miles	Chassis Lubricant	3 places as required	
15	Front and Rear Axle	7,500 Miles	GL-5	As required	Check See Lubrication Section
17	Drag Link	7,500 Miles	Chassis Lubricant	2 places as required	
18	Brake and Clutch Pedal Springs	7,500 Miles	Engine Oil	As required	
21	Transfer Case	7,500 Miles	GL-5	As required	Check See Lubrication Section
22	Throttle Bell Crank – L-6	15,000 Miles	Engine Oil	As required	

Fig. 8—Lubrication Four Wheel Drive Models



No.	Lubrication Points	Lubrication Period	Type of Lubrication	Quantity	Remarks
1	Control Arm Bushings and Ball Joints	7,500 Miles	Chassis Lubricant	12 places as required	
2	Tie Rod Ends	7,500 Miles	Chassis Lubricant	4 places as required	2 fittings each side
3	Wheel Bearings	30,000 Miles	Whl. Brg. Lubricant	2 places as required	
4	Steering Gear Clutch Cross-Shaft	30,000 Miles 7,500 Miles	Chassis Lubricant	As required	
5	Trans. Control Shaft	7,500 Miles	Chassis Lubricant	As required	
6	Air Cleaner—Element	15,000 Miles			See Vehicle Maintenance Schedule
8	Transmission—Manual —Automatic	7,500 Miles 7,500 Miles	GL-5 Dexron®-II or Equivalent	As required As required	See Lubrication Section See Lubrication Section
9	Rear Axle	7,500 Miles	GL-5	As required	See Lubrication Section
10	Oil Filter	Every Second Oil Change			
11	Brake Master Cylinder	7,500 Miles	Delco Supreme No. 11 or DOT-3 fluids	As required	Check—Add fluid when necessary
12	Parking Brake Linkage	7,500 Miles	Chassis Lubricant		Lubricate Linkage and Cables

Fig. 9—Lubrication-1/2Ton G Models

SECTION 1A

HEATER AND AIR CONDITIONING

CONTENTS OF THIS SECTION

GENERAL INFORMATION

Refer to the 1974 Light Duty Truck Service Manual for servicing the standard heater and auxiliary heater.

AIR CONDITIONING

Refer to the 1974 Light Duty Truck Service Manual for servicing an air conditioning system with a V8 engine or six cylinder engine with the following exception:

RADIAL FOUR CYLINDER COMPRESSOR

A radial four cylinder compressor (Fig. 1) is used on a vehicle with a six cylinder engine.

The compressor is mounted to the engine by mounting brackets (Fig. 2) and is belt driven by the engine when the electromagnetic clutch assembly on the compressor is energized by the air conditioning controls.

The purpose of the compressor is to pump low pressure, low temperature refrigerant vapor produced by the evaporator and compress it into a high pressure, high temperature vapor which can then be readily condensed back to a liquid state by the condensor.

The compressor has a displacement of 10.0 cu. in. The compressor has variations in the pulley rim diameter specified for the respective vehicle applications.

The basic compressor mechanism is a modified scotch yoke with four cylinders located radially in the same plane. Opposed pistons are pressed into a yoke which rides upon a slider block located on the shaft eccentric. Rotation of the shaft provides reciprocating piston motion with no "connecting rods". The mechanism is completely balanced with counterweights. Needle bearings are used for the shaft journals and the shaft eccentric. Pistons and yokes, along with the main cylinder housing and front cover, are made from aluminum to provide light weight. Teflon piston rings are used to provide both a gas compression seal and a piston-to-bore bearing surface. The outer shell is a simple steel band which encloses a large annular discharge muffler space.

Two O-rings provide a seal between the compressor shell and the compressor cylinder. A rubber seal ring seals the front head to the cylinder assembly and the shaft seal assembly provides a front head to shaft seal.

Refrigerant flows into the crankcase from the connector block at the rear, is drawn through the reeds attached to the piston top during the suction stroke, and is discharged outward through the discharge valve plate which is held in place at the top of the cylinder by a snap ring. Discharge gas flows out of the compressor muffler cavity through the connector block at the rear.

Clutch Coil

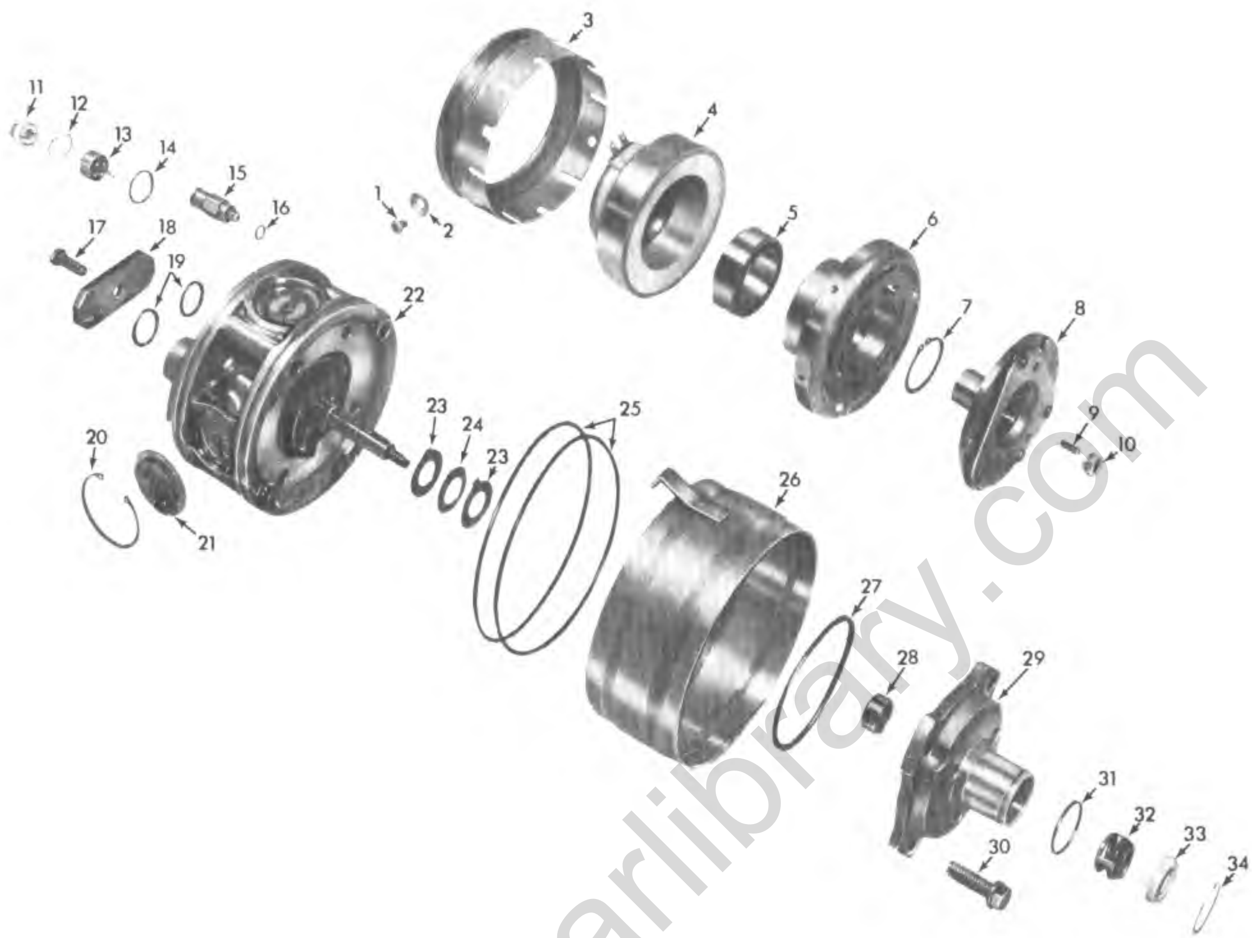
The clutch coil is moulded into the steel coil housing and must be replaced as a complete assembly. Three protrusions on the rear of the housing fit into alignment holes in the compressor front head. The coil is secured to the front head by a pressed fit between the coil housing and neck portion of the front head. The coil has 3.65 ohms resistance at 80°F. ambient and will require no more than 3.2 amperes at 12 volts D.C. The clutch coil has two terminals for the power and ground leads.

Clutch-Pulley

The movable part of the clutch drive plate is in front of and adjacent to the rotor and bearing assembly. The armature plate, the movable member, is attached to the drive hub through driver springs riveted to both members. The hub of the drive plate is pressed on the compressor shaft and keyed to the shaft by a square drive key. A self-locking nut threads on the end of the shaft and is tightened against the shaft. The rotor and hub is a welded assembly and contains six threaded holes for mounting the pulley rim. The pulley rim is secured to the rear portion of the rotor by six screws and six special lock washers.

A two-row ball bearing is pressed into the rotor hub and held in place by three punch stakes, 120° apart, into the rotor hub near the hub bore. The entire clutch coil, pulley rim, rotor and bearing assembly is pressed on the front head of the compressor and secured by a retainer ring.

When power is supplied to the clutch coil the armature



1. Screw
2. Locking Washer
3. Pulley Rim
4. Coil and Housing Assy.
5. Rotor Bearing
6. Rotor and Bearing Assy.
7. Retaining Ring
8. Clutch Drive Assy.
9. Clutch Hub Key
10. Shaft Nut
11. Cap
12. Retaining Ring
13. Superheat Switch
14. O-Ring
15. Pressure Relief Valve
16. O-Ring
17. Screw
18. Shipping Plate
19. O-Ring
20. Retaining Ring
21. Valve Plate Assy.
22. Cylinder and Shaft Assy.
23. Thrust Washer
24. Belleville Washer
25. O-Ring
26. Shell Assy.
27. Ring Seal
28. Main Bearing
29. Front Head Assy.
30. Screw and Washer Assy.
31. O-Ring
32. Shaft Seal
33. Seal Seat
34. Retaining Ring

Fig. 1—Radial Four Cylinder Compressor-Exploded View

plate of the drive plate and hub assembly electromagnetically engages the slotted portion of the rotor face which then drives the crankshaft through the drive plate leaf springs and hub.

Shaft Seal

The main shaft seal, located in the neck of the compressor front head, consists of the seal assembly with its ceramic seal face in a spring loaded cage. An "O" ring seal, located within the ceramic seal, provides a seal to the shaft surface. The contact surface of the shaft seal seat is finished to a high polish and must be protected against nicks, scratches and even fingerprints. Any surface damage will cause a poor seal. An "O" ring, located in an internal groove in the neck of the front head provides a seal with the outer diameter of the seal seat. A retainer ring, tapered side away from the seat, secures the seat in place. The hub and armature plate must be removed to gain access to the seal. A shaft seal kit contains all necessary replacement parts for field service.

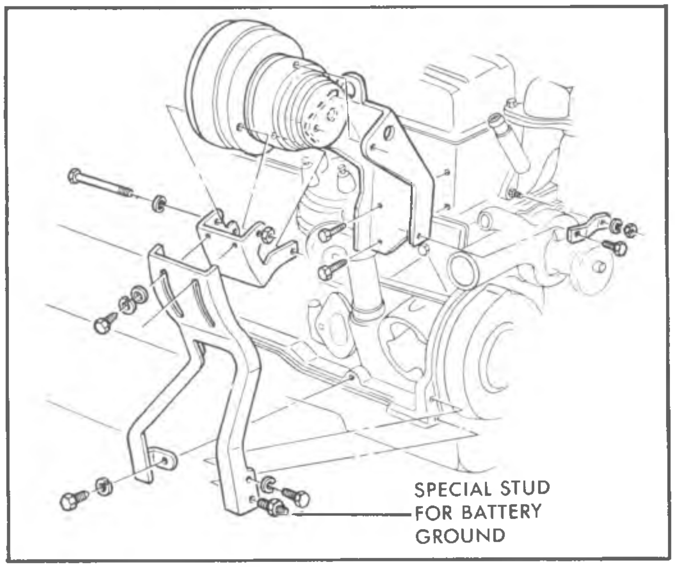


Fig. 2—Compressor Mounting · L6 Engine

Front Head

The front head contains the front main shaft bearing pressed in place and a drilled oil hole for lubrication to the shaft seal cavity. The front head is mounted to the cylinder assembly by four screw and washer assemblies.

Thrust Washers

One thrust washer is used on the rear end of the crankshaft between the rear eccentric and the rear of the cylinder. A belleville washer, sandwiched between two thrust washers at the front of the shaft between the front eccentric and the front head controls the lateral thrust tolerance of the shaft and cylinder assembly. The two thrust washers have tangs and are assembled with the tangs facing inward to engage and cause the thrust and belleville washer assembly to rotate as a unit and not separately.

CONDENSER · CK MODEL

Replacement (Fig. 3)

1. Disconnect battery ground cable.
2. Purge the system of refrigerant.
3. Remove the grille assembly.
4. Remove the radiator grille center support.
5. Remove the left grille support to upper fender support (2) screws.
6. Disconnect the condenser inlet and outlet lines and the outlet tube line at the right end of the condenser. Cap or plug all open connections at once.
7. Remove the condenser to radiator support screws.
8. Bend the left grille support outboard to gain clearance for condenser removal.
9. Remove the condenser assembly by pulling it forward and then lowering it from the vehicle.
10. To install a new condenser, reverse Steps 1-9 above. Add one fluid ounce of clean refrigeration oil to a new condenser.

    NOTE: Use new "O" rings, coated with clean refrigeration oil, when connecting all refrigerant lines.

11. Evacuate, charge and check the system.

HEATER AIR DISTRIBUTOR AND EXTENSION DUCT · G MODEL

Replacement

1. Disconnect battery ground cable.
2. Remove engine cover.
3. Remove evaporator-blower shield.
4. Remove shield bracket.
5. Remove left floor outlet deflector and bracket.
6. Loosen steering column to instrument panel reinforcement screws. Remove one screw. Torque both screws on installation.
7. Disconnect speedometer cable at meter.
8. Remove instrument panel to lower reinforcement attaching screws.
9. Move instrument panel assembly rearward.

   Disconnect radio antenna and electrical connector. Support instrument panel at right visor.

   Disconnect electrical connector at brake switch.

10. Remove blower-evaporator support bracket to door

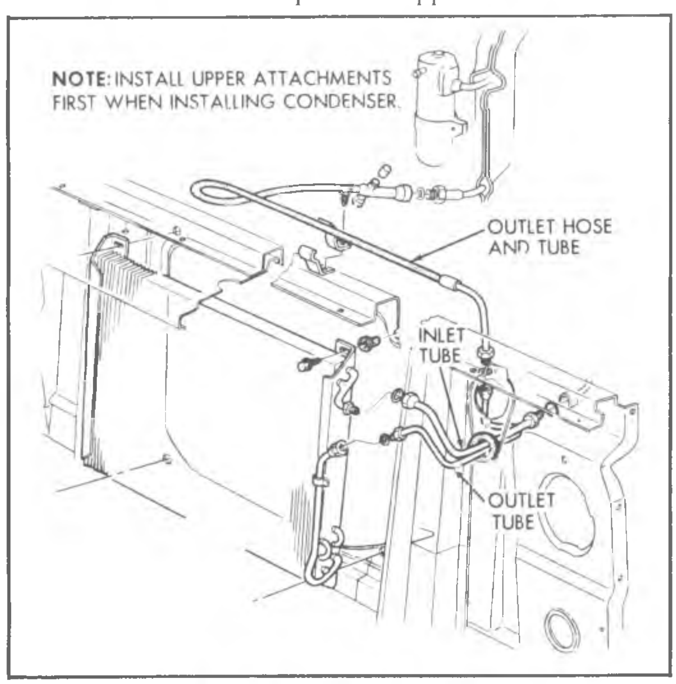


Fig. 3—Condenser (CK Model)

pillar and forward engine housing attaching screws. Move rearward to gain access.

11. Disconnect vacuum lines and electrical connectors. Remove heater distributor duct assembly.
12. Transfer duct and relays.
13. To reassemble, Reverse Steps 1-12.

HEATER CORE CASE AND CORE - G MODEL

Replacement

Follow Steps 1-10 of "Heater Air Distributor and Extension Duct Replacement" procedure.

11. Remove battery.
12. Disconnect heater hoses at heater core (drain pan below hoses) refill radiator upon completion.
13. Remove air inlet valve assembly.
14. Remove temperature door control cable at heater case.
15. Remove heater assembly.
16. Remove heater core. Reseal heater case.
17. To reassemble. Reverse Steps 1-16.

AIR INLET VALVE - G MODEL

Replacement

Follow Steps 1-10 of "Heater Air Distributor and Extension Duct Extension Duct Replacement" procedure.

11. Remove duct assembly. Disconnect vacuum hose.
12. Remove vacuum valve.
13. To reassemble, Reverse Steps 1-12.

TEMPERATURE DOOR CABLE - G MODEL

Replacement

Follow Steps 1-10 of "Heater Air Distributor and Extension Duct Replacement" procedure.

11. Disconnect temperature door control cable at heater case.
12. Disconnect temperature door control cable at control.
13. Make up new cable.
14. To reassemble, Reverse Steps 1-13.

SECTION 1B

BODY

NOTE: Except for the items listed below, all information found in section 1B of the 1974 Light Duty Truck Service Manual is applicable to 1975 Light Duty Trucks.

INDEX

C-K MODELS

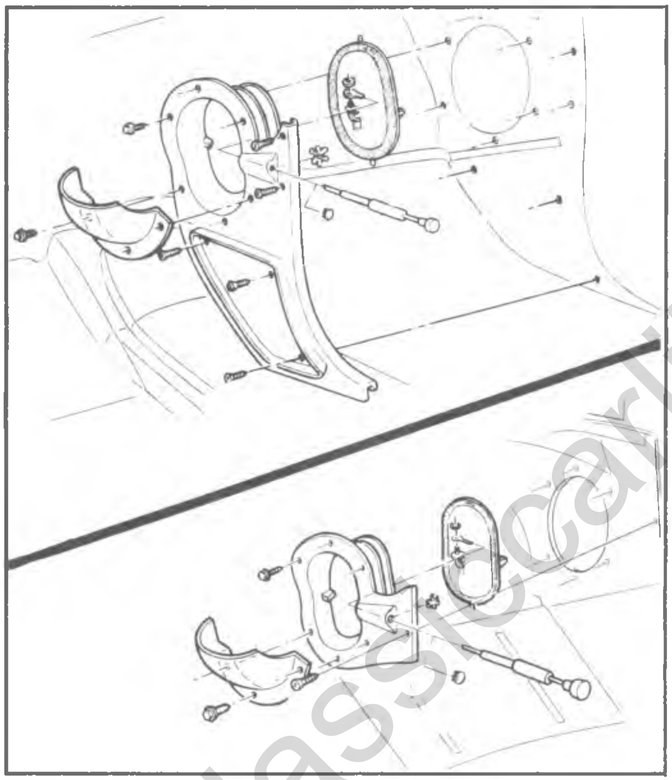


Fig. 1—Cowl Vent Valves

COWL VENT VALVES

Two styles are shown in figure 1. Removing the attaching screws allows removal of the valve from the side panels. *Refer to page 1B-6 of the 1974 manual.*

Fig. 2—Glass Run Channel Adjustment

REAR SIDE DOOR (MODELS 06 AND 03)

Glass Run Channel Adjustment

Figure 2 illustrates the front run channel. At the lower end, a slotted bracket provides for in-and-out adjustment. The screw and locknut at that bracket allow fore-and-aft adjustment.

Together, this allows proper alignment of the glass to the rear glass run channel for full up and down travel. *Refer to pages 1B-14 and 1B-15 of the 1974 manual.*

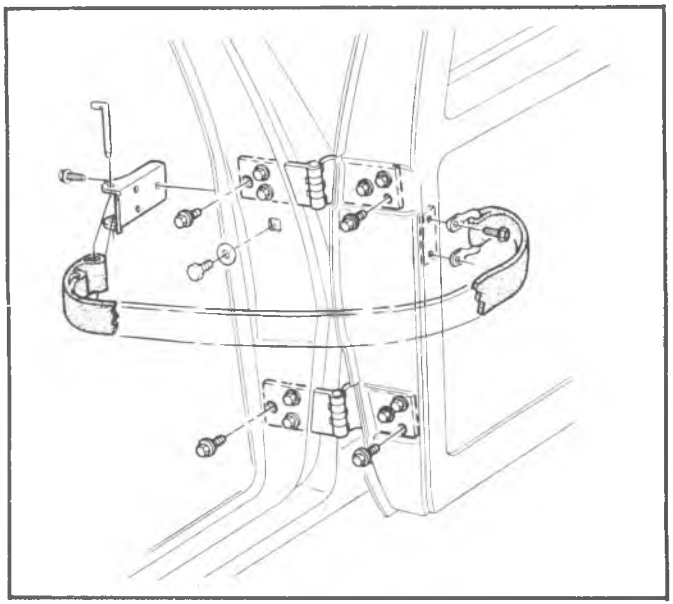


Fig. 3—Rear Door Hinges and Strap

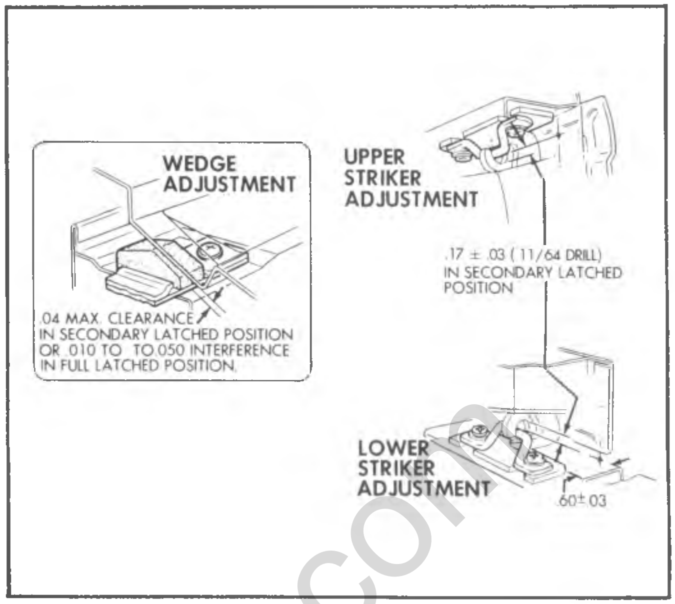


Fig. 4—Wedge and Striker Adjustments

REAR DOOR CHECK STRAP

Model 06

Figure 3 shows the cloth check strap used for rear doors. The door may be completely opened by removing the strap pin from the bracket. The bracket attaches to the pillar with three screws; the strap is fastened to the door panel with two screws and an attaching bar. *Refer to page 1B-18 of the 1974 manual.*

REAR DOOR— STRIKER AND WEDGE ADJUSTMENTS

Figure 4 illustrates the rear door latch strikers and door wedges. Be sure that adjustments are as shown to insure proper latching of the rear doors. *Refer to page 1B-18, figure 48, of the 1974 manual.*

CAUTION ADDED— ENDGATE DISASSEMBLY

Model 06

Refer to page 1B-20 of the 1974 Light Duty Truck Service Manual.

Step 10 defines the proper method of removing the regulator on an electric-powered window. The following CAUTION emphasizes the need for following step 10 carefully:

> **CAUTION:** *Step 10 must be performed if the window is removed or disengaged from the regulator lift arms. The lift arms are under tension from the counter-balance spring, and can cause injury if the motor is removed without locking the sector gears in position.*

G MODELS

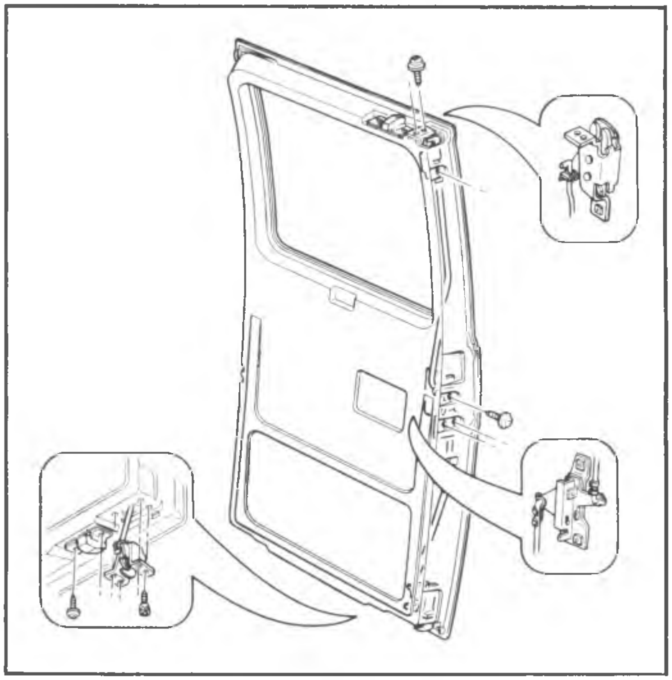


Fig. 5—Remote Control and Latches

REAR DOOR ITEMS

Latches, Strikers and Wedges

Figures 5 and 6 illustrate the new latches, strikers, wedges and adjustment dimensions for G-Model rear doors. *Refer to pages 1B-44 and 1B-45 of the 1974 Light Duty Truck Service Manual for replacement instructions.* Note the new dimensions for striker adjustments.

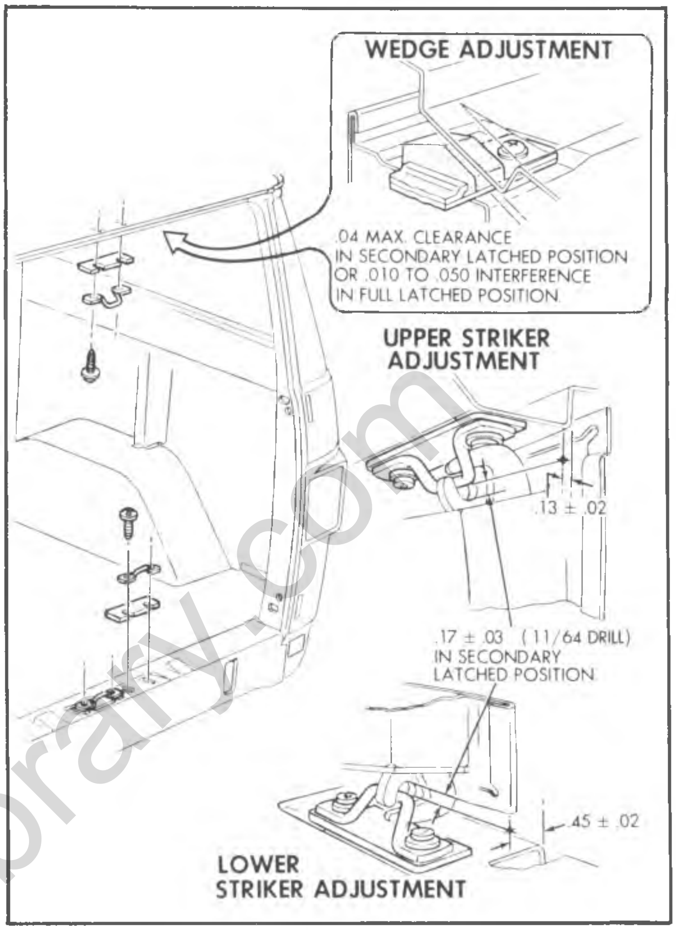


Fig. 6—Rear Door Striker and Wedge Adjustments

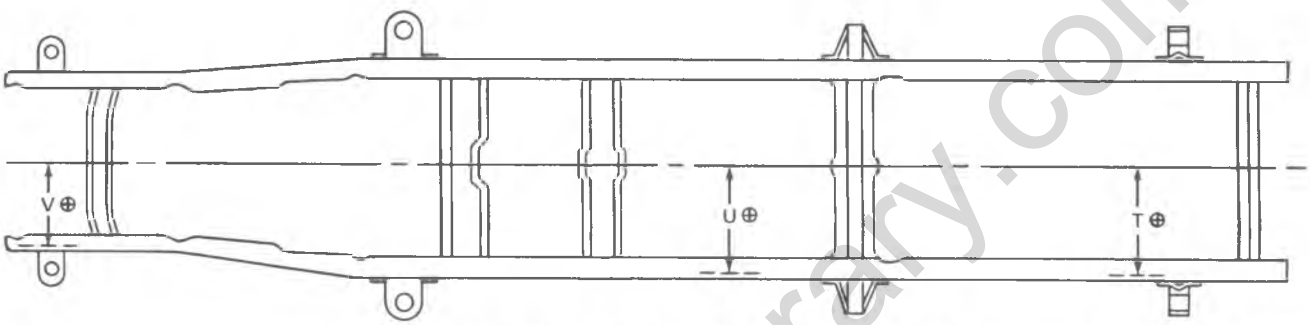
SECTION 2

FRAME

Truck frames are essentially carryover with some models undergoing configuration and alignment reference dimension changes. The 10-30 series frames and related dimensions are shown in figures 1 through 3.

Model	A	B	C	D	E	F	G	H	I	J	K	L	M	N	P	R	S	T	U	V
CA107	13-3/8	15-1/4	16	19-7/8	12	13	10	14-7/8	17-3/4	17-3/4	19-7/8	16-3/4	15-5/8	17-3/4	69-5/8	76-1/2	110	16-7/8	16-7/8	14
CA109	13-3/8	15-1/4	16	19-7/8	12	13	10	14-7/8	17-3/4	17-3/4	19-7/8	16-3/4	15-5/8	17-3/4	69-5/8	86-1/2	120	16-7/8	16-7/8	14
CA209	13-3/8	15-1/4	17	19-7/8	12	13	10	14-7/8	17-3/4	17-3/4	19-7/8	16-3/4	15-5/8	17 3/4	69-5/8	86-1/2	120	16-7/8	16-7/8	14
CA 210 310	13-3/4	15-1/4	16	18-1/2	10	13	10	14-1/4	17-3/4	17-3/4	19-7/8		15-5/8	17-3/4	69-7/8	105	131	16-7/8	16-7/8	14
CA314	13-3/8	14-7/8	16	18-1/2	10	13	10	14-1/4	17-3/4	17-3/4	19-7/8		15-5/8	17-3/4	69-7/8	129	155-1/2	16-7/8	16 7/8	14
KA107	13-3/8	15-1/4	17	19-7/8	12-1/2	13	10	14-7/8	17-3/4	17-3/4	19-7/8	16-3/4	15-5/8	17-3/4	69-5/8	76-1/2	110	16-7/8	16-7/8	14
KA 109 209	13-3/8	15-1/4	17	19-7/8	12-1/2	13	10	14-7/8	17-3/4	17-3/4	19-7/8	16-3/4	15-5/8	17-3/4	69-5/8	86-1/2	120	16-7/8	16-7/8	14
PA100	7-5/8	9-3/8	11	14-5/8	9-1/2	13	10			9-1/2	13		10-7/8	13	71-7/8	36	89	16-7/8	16-7/8	14
PA 208 308	7-5/8	9-3/8	11-5/8	14-5/8	9-1/2	13	10	9-1/2	13	9-1/2	13		10-7/8	13	72-1/4	59	131	16-7/8	16-7/8	14
PA 210 310	7-5/8	9-3/8	11-5/8	14-5/8	9-1/2	13	10	9-1/2	13	9-1/2	13	10-7/8	10-7/8	13	71-7/8	67	153	16-7/8	16-7/8	14
PA314	7-5/8	9-3/8	11-5/8	14-5/8	9-1/2	13	10	9-1/2	13	9-1/2	13	10-7/8	10-7/8	13	71-7/8	91	177	16-7/8	16-7/8	14
CA105	13-3/8	15-1/4	17	19-7/8	12	13	10			14-1/4	20	17-3/4	15-5/8	17-3/4	69-5/8	46	88	16-7/8	16-7/8	14
KA105	13-3/8	15-1/4	17	19-7/8	12-1/2	13	10			14-1/4	20	17 3/4	15-5/8	17-3/4	69-5/8	46	88	16-7/8	16-7/8	14
PE 31132 (137)	9-1/8	11-1/2	10-7/8		9-1/2	13	10	9-1/2	13	9-1/2	13	10-7/8	10-7/8	13	68-1/2	71	157	16-7/8	16-7/8	14
PE 31432 (157)	9-1/8	11-1/2	10-7/8		9-1/2	13	10	9-1/2	13	9-1/2	13	9-7/8	10-7/8	13	68-1/2	92-1/2	178-1/2	16-7/8	16-7/8	14
PE 31832	9-1/8	11-1/2	10-7/8		9-1/2	13	10	9-1/2	13	9 1/2	13	10-7/8	10-7/8	13	68-1/2	112	240-3/16	16-7/8	16-7/8	14

Fig. 1—C-K-P Truck Reference Dimensions



DIMENSIONS TO HOLES OR SLOTS ARE MEASURED TO THE CENTER OF HOLE OR SLOT
GAUGE HOLES ARE 5/8" DIAMETER

⊕ INDICATES THAT THE DIMENSION IS TO THE UNDERSIDE OF THE FRAME TOP SURFACE OR INSIDE OF THE FRAME OUTER SURFACE

NOTE: FRAME ILLUSTRATED IS TYPICAL. FRAME DESIGN VARIES ACCORDING TO TRUCK MODEL

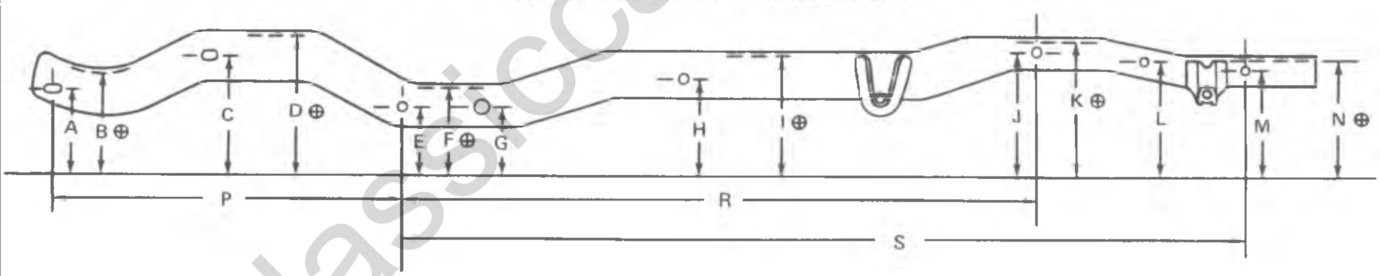


Fig. 2—C-K-P Truck Frame Reference Points

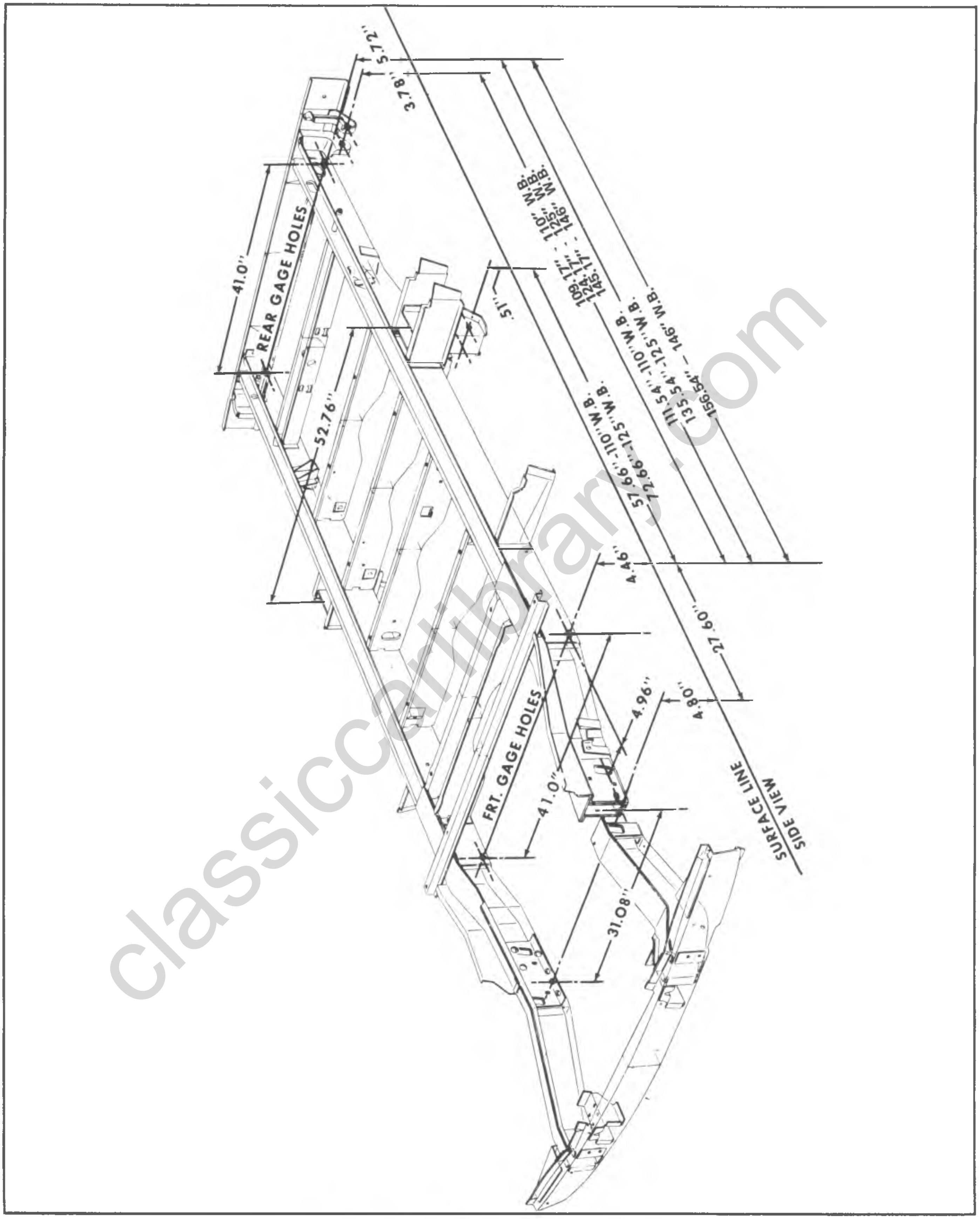


Fig. 3—G-Van Truck Frame Reference Dimensions

SECTION 4

REAR SUSPENSION AND REAR AXLE

NOTE: Except for the following items, all information found in Section 4 of the 1974 Light Duty Truck Service Manual is applicable to the 1975 Light Duty Trucks.

INDEX

SERVICE INFORMATION

BUSHING REPLACEMENT—

Rear Spring, Front Eye

Heavy duty leaf springs on C20 and C30 trucks use a staked-in-place front eye bushing. Before this bushing is pressed out of the spring, the staked locations must be straightened with a chisel or drift. After a new bushing is installed, it must be staked in three equally spaced locations. *Refer to page 4-6 in the 1974 Light Duty Truck Service Manual.*

PROPSHAFT

Universal Joint—Repair

Two methods of retaining trunnions to universal joint yokes may be used. Each requires a different repair procedure.

The snap ring method is described on pages 4-9 through 4-10 of the 1974 Light Duty Truck Service Manual.

An injection-molded plastic retainer ring is used on other universal joints. For this type joint, the following repair procedure should be used.

Disassembly

NOTE: Never clamp drive shaft tubing in a vise as the tube may be dented. Always clamp on one of the yokes, and support the shaft horizontally. Avoid damaging the slip yoke sealing surface. Nicks may damage the bushing or cut the seal lip.

1. Support the drive shaft in a horizontal position in ine with the base plate of a press. Place the universal joint so that the lower ear of the shaft yoke is supported on a 1-1/8" socket. Place the cross press, J-9522-3, on the open horizontal bearing cups, and press the lower bearing cup out of the yoke ear as shown in figure 1. This will shear the plastic retaining the lower bearing cup.

2. If the bearing cup is not completely removed, lift the cross and insert Spacer J-9522-5 between the seal and bearing cup being removed, as shown in figure 2.

   Complete the removal of the bearing cup, by pressing it out of the yoke.

3. Rotate the drive shaft, shear the opposite plastic retainer, and press the opposite bearing cup out of the yoke as before, using Spacer J-9522.

4. Disengage cross from yoke and remove.

   NOTE: Production universal joints cannot be reassembled. There are no bearing retainer grooves

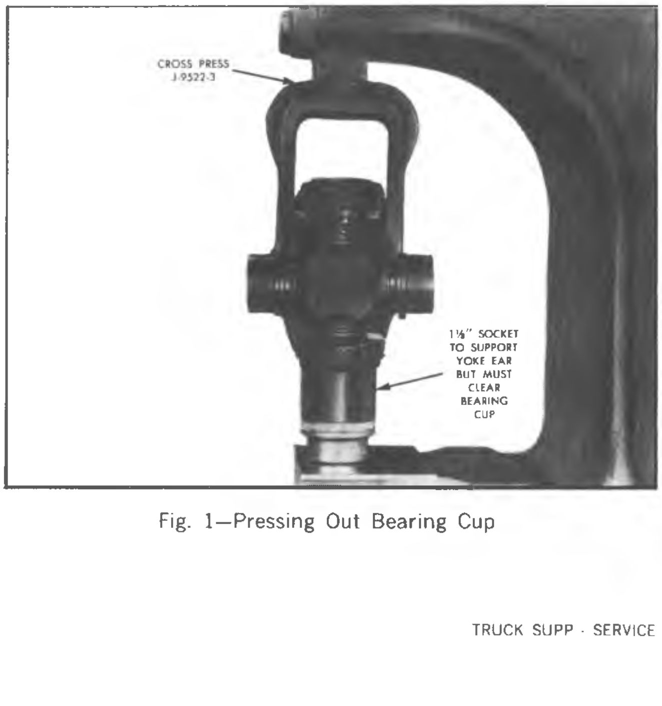


Fig. 1—Pressing Out Bearing Cup

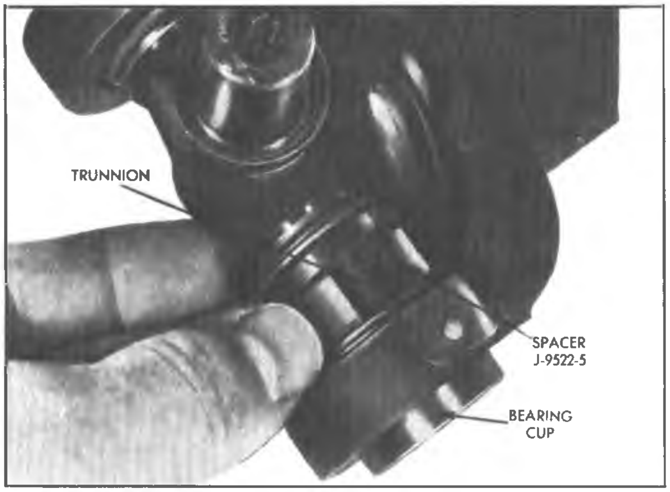


Fig. 2—Using Spacer to Remove Bearing Cup

in production bearing cups. Discard all universal joint parts removed.

5. Remove the remains of the sheared plastic bearing retainer from the ears of the yoke. This will aid in reassembly of the service joint bearing cups. It usually is easier to remove plastic if a small pin or punch is first driven through the injection holes.
6. If the front universal joint is being serviced, remove the pair of bearing cups from the slip yoke in the same manner.

Reassembly

A universal joint service kit is used when reassembling this joint. See figure 3. This kit includes one pregreased cross assembly, four service bearing cup assemblies with seals, needle rollers, washers, grease and four bearing retainers.

Make sure that the seals are in place on the service bearing cups to hold the needle rollers in place for handling.

1. Remove all of the remains of the sheared plastic

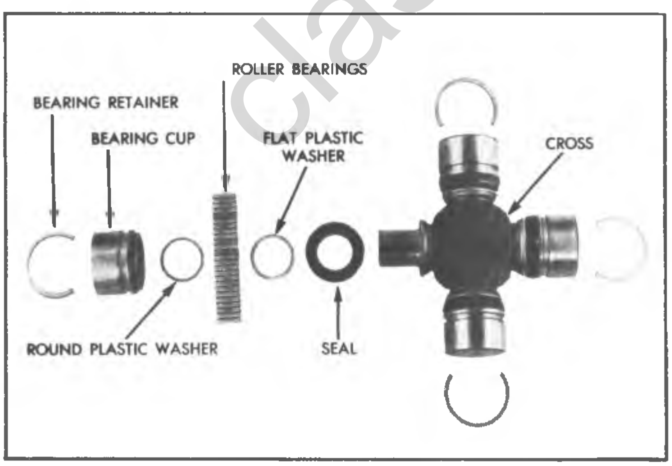


Fig. 3—Repair Kit

Fig. 4—Installing Trunnion into Yoke

bearing retainers from the grooves in the yokes. The sheared plastic may prevent the bearing cups from being pressed into place, and this prevent the bearing retainers from being properly seated.

2. Install one bearing cup part way into one side of the yoke, and turn this yoke ear to the bottom.
3. Insert cross into yoke so that the trunnion seats freely into bearing cup as shown in figure 4.
4. Install opposite bearing cup part way. Make sure that both trunnions are started straight and true into both bearing cups.
5. Press against opposite bearing cups, working the cross all of the time to check for free movement of the trunnions in the bearings. If there seems to be a hang-up, stop pressing and recheck needle rollers, to determine if one or more of them has been tipped under the end of the trunnion.
6. As soon as one bearing retainer groove clears the inside of the yoke, stop pressing and snap the bearing retainer into place as shown in figure 5.

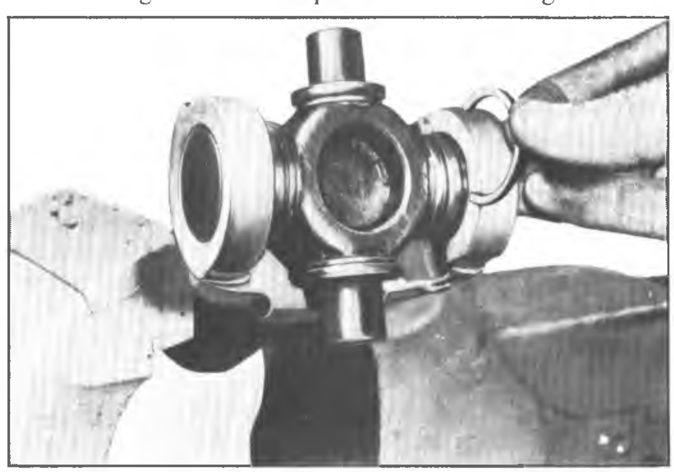


Fig. 5—Installing Snap Ring to Retain Trunnion

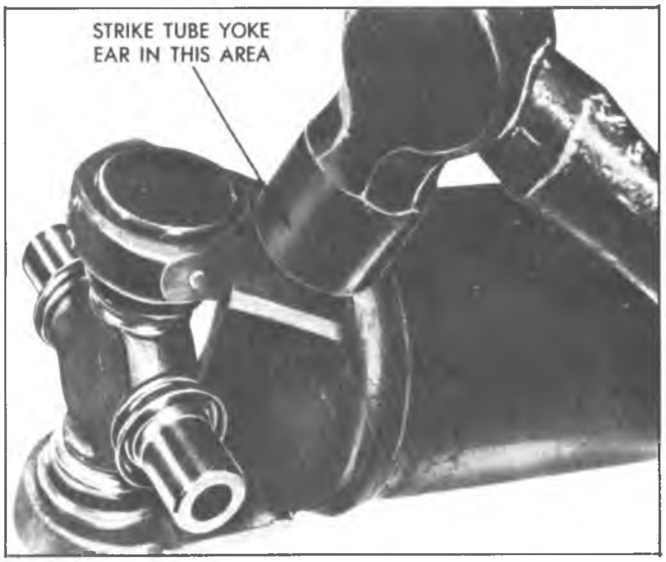


Fig. 6—Seating Snap Rings

7. Continue to press until the opposite bearing retainer can be snapped into place. If difficulty is encountered, strike the yoke firmly with a hammer to aid in seating bearing retainers. This springs the yoke ears slightly. See figure 6.

8. Assemble the other half of the universal joint in the same manner.

9. Check the freedom of rotation of both sets of trunnions of the cross. If too tight, again rap the yoke ears as described above. This will loosen the bearings and help seat the bearing retainers.

PROPSHAFT INSTALLATION—CORRECT PHASING

When reinstalling propshafts, it is necessary to place the shafts into particular positions to assure proper operation. This is called phasing. *Refer to procedures and illustrations on page 4-12 of the 1974 Light Duty Truck Service Manual.* For 1975 trucks, three methods of phasing are used.

All models with 32 splines use an alignment key, as shown in figure 7, to obtain proper phasing. The shafts can mate only in the correct position.

C and G models with 16 splines must be phased as shown in figure 8. The rear shaft must be rotated four splines—90°—toward the left side of the vehicle **after** aligning the trunnions vertically, as shown.

K models with 16 splines must align the trunnions vertically before installing. **Do not rotate** the shafts.

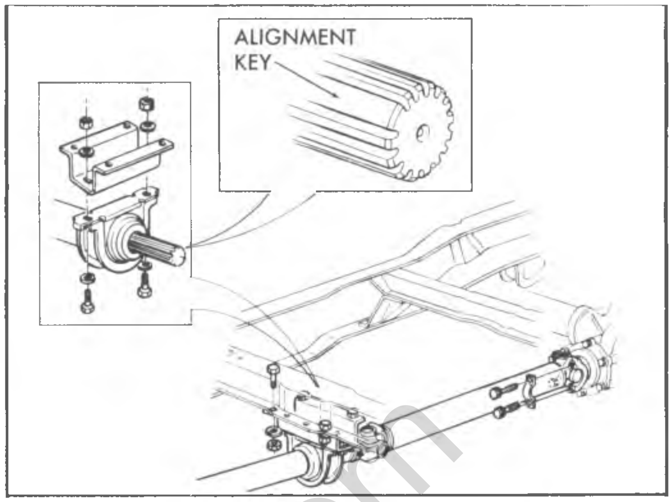


Fig. 7—Alignment Key

AXLE SHAFT

Remove and Reinstall

Axles equipped with 8-7/8" ring gears and Eaton Locking differentials use a thrust block on the pinion shaft which affects the removal of axle shafts as noted below.

1. Raise the vehicle on a hoist. Remove both rear wheel and tire assemblies and both rear brake drums.
2. Remove the rear cover and drain the lubricant.
3. Rotate the case **to the position shown in figure 9.** Support the pinion shaft so that it cannot fall into the case, then remove the lock screw.
4. Carefully withdraw the pinion shaft part-way out, as shown in figure 10. Rotate the case until the shaft touches the housing.
5. Reach into the case with a screwdriver or similar tool, and rotate the C-lock until its open end points directly inward, as shown in figure 11. The axle shaft cannot be pushed inward until the C-lock is properly positioned.

   Do not force or hammer the axle shaft in an attempt to gain clearance.
6. When the C-lock is positioned to pass through the end of the thrust block, push the axle shaft inward as shown in figure 12, and remove the C-lock. Remove the axle shaft and repeat steps 5 and 6 for the opposite axle shaft.

7.When installing C-locks keep the pinion shaft partially withdrawn. Place the C-lock in the same position shown in figure 11. Carefully withdraw the axle shaft until the C-lock is clear of the thrust block. When both locks are installed, install the pinion shaft and lock screw.

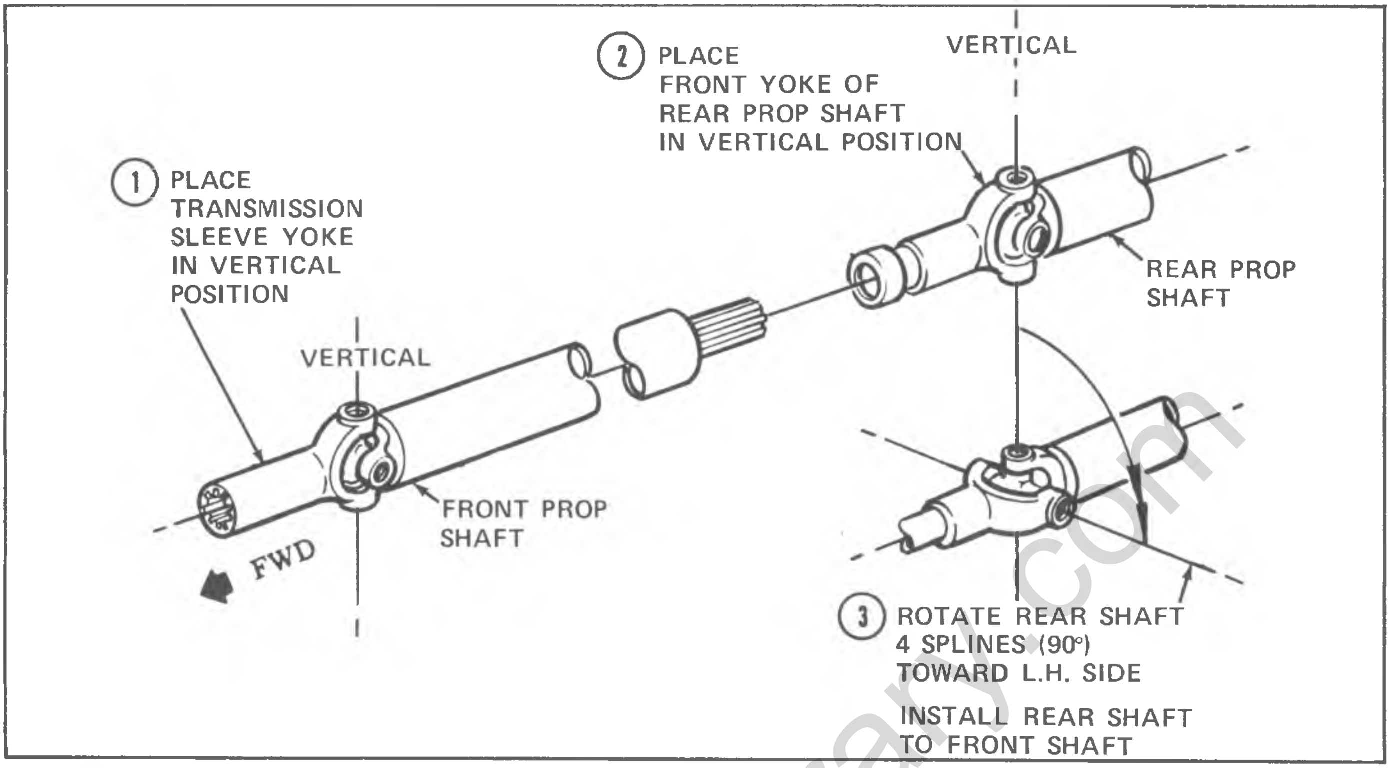


Fig. 8—Alignment for Phasing—C and G Models Only

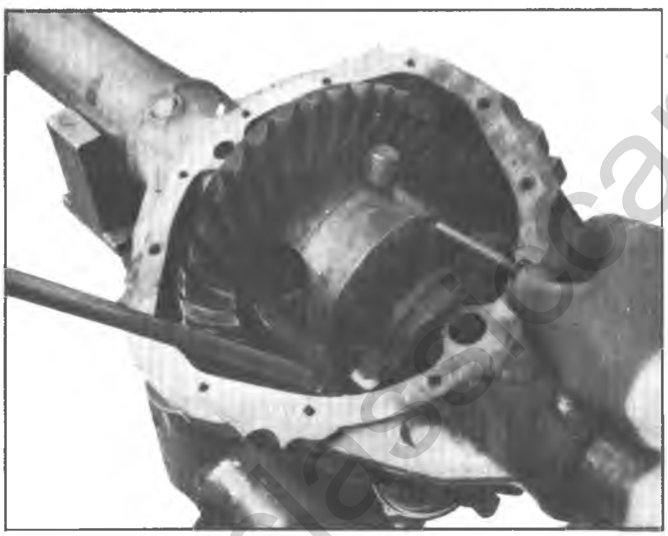


Fig. 9—Removing Lock Screw

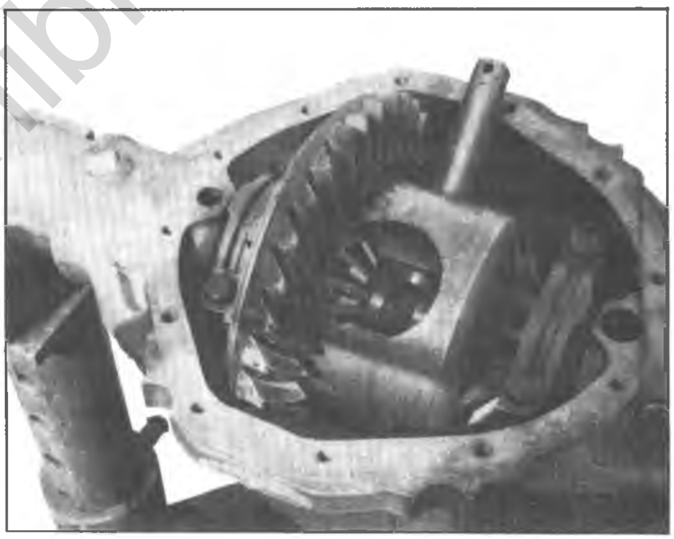


Fig. 10—Positioning Case For Best Clearance

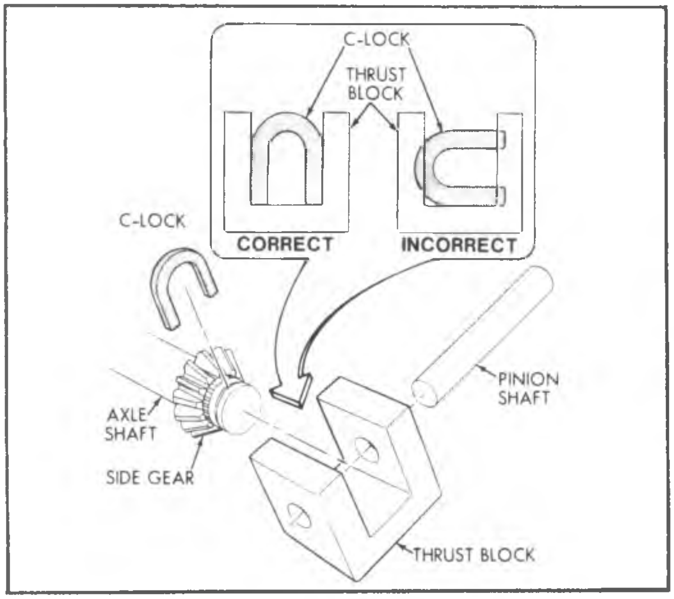


Fig. 11—Correct C-Lock Position

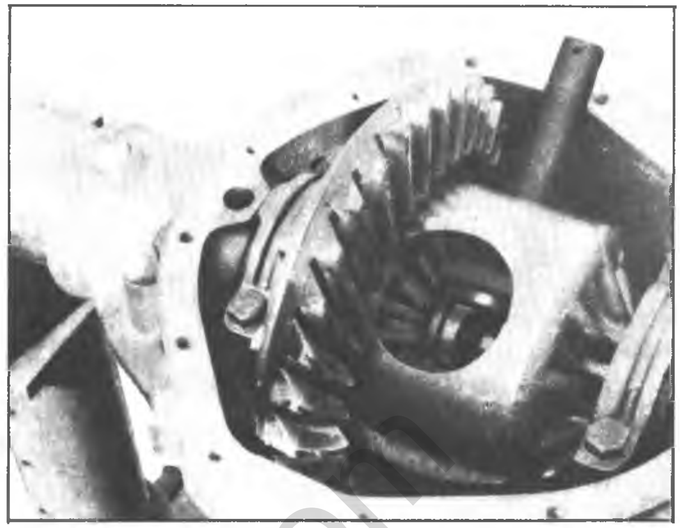


Fig. 12—Push Axle Shaft Inward

SECTION 5

BRAKES

The following caution applies to one or more steps in the assembly procedure of components in this portion of the manual as indicated at appropriate locations by the terminology "See Caution on page 1 of this section".

CAUTION: THIS FASTENER IS AN IMPORTANT ATTACHING PART IN THAT IT COULD AFFECT THE PERFORMANCE OF VITAL COMPONENTS AND SYSTEMS, AND/OR COULD RESULT IN MAJOR REPAIR EXPENSE. IT MUST BE REPLACED WITH ONE OF THE SAME PART NUMBER OR WITH AN EQUIVALENT PART IF REPLACEMENT BECOMES NECESSARY. DO NOT USE A REPLACEMENT PART OF LESSER QUALITY OR SUBSTITUTE DESIGN. TORQUE VALUES MUST BE USED AS SPECIFIED DURING REASSEMBLY TO ASSURE PROPER RETENTION OF THIS PART.

CONTENTS OF THIS SECTION

STANDARD BRAKES

The 1975 Light Duty Truck standard brake components are essentially the same as those described in the 1974 Light Duty Truck Service Manual. Design modifications to 1974 and 1975 models, differing from the 1974 manual, are outlined on the following pages.

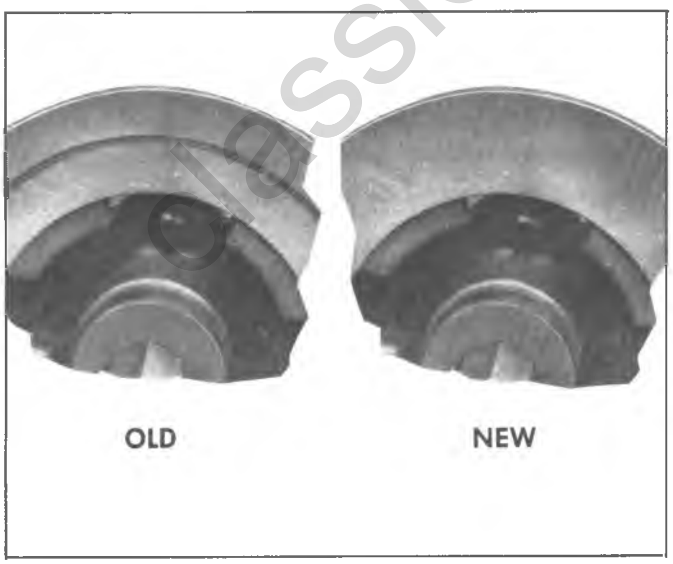


Fig. 1--Disc Brake Rotor

FRONT DISC BRAKE

1975 front disc brake rotors will not incorporate an anti-squeal groove in the disc pad contact surfaces (Fig. 1).

BRAKE PEDAL ADJUSTMENT

All brake pedal push rods are non-adjustable on 1975 models except Motor Home Chassis Units — see the Hydro-boost section of the 1974 Service Manual.

STOPLAMP SWITCH INSTALLATION (C-K Models)

The stoplamp switch is mounted to a flange protruding from brake pedal support bracket.

Installation (Fig. 2)

1. Install the mounting clip in the brake pedal flange from the pedal side of the flange.
2. Depress the brake pedal and push the switch into the clip until the shoulder on the switch bottoms on the clip.

Adjustment

1. Allow the pedal to return to its normally released position.
2. Adjust the switch so that electrical contact is made when the brake pedal is depressed 3/8" to 5/8" from its normally released position.

PARKING BRAKE

Parking brake and cable replacement procedures remain the same as described in the 1974 Light Duty Truck Service Manual; however, cable routings, clips or guides incorporate minor changes as noted in Figures 3 and 4.

PARKING BRAKE (PROPELLER SHAFT)—INTERNAL EXPANDING

Adjustment—Drum On

1. Jack up at least one rear wheel. Block wheels and release hand brake.
2. Remove cotter pin and clevis pin connecting pull rod and relay lever. This will assure freedom for full shoe release.

   CAUTION: *It may be necessary to knock out lanced area in brake drum with punch and hammer to gain entry into adjusting screw through brake drum. Be sure all metal has been removed from parking brake compartment.*

3. Rotate brake drum to bring one of access holes into line with adjusting screw at bottom of shoes (manual transmission), top of shoes (automatic transmission).
4. Expand shoes by rotating adjusting screws with screwdriver inserted through hole in drum. Move outer end of screwdriver away from drive shaft. Continue adjustment until shoes are tight against drum and drum cannot be rotated by hand. Back off adjustment ten notches and check drum for free rotation.

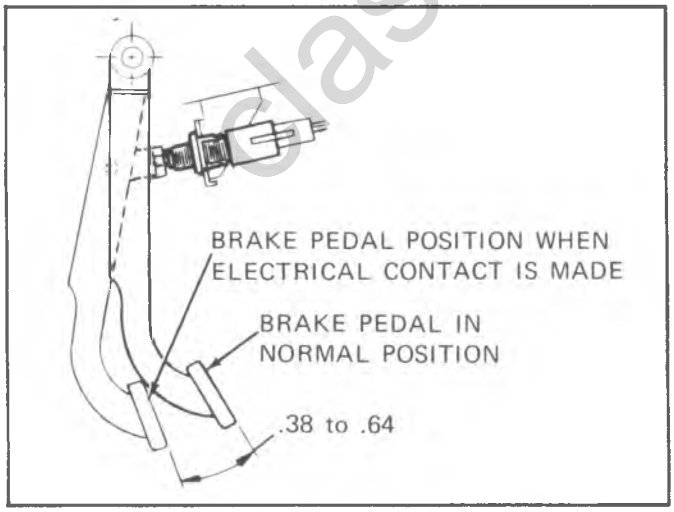


Fig. 2--Stoplamp Switch (C-K Models)

5. Place parking brake lever in fully released position. Take up slack in brake linkage by pulling back on cable just enough to overcome spring tension. Adjust clevis of pull rod or front cable to line up with hole in relay levers.
   a. Insert clevis pin and cotter pin, then tighten clevis locknut.
   b. Install a new metal hole cover in drum to prevent contamination of brake.
   c. Lower rear wheels. Remove jack and wheel blocks.

CAUTION: *See "Caution" on Page 1 of this section.*

Removal

1. Remove the propeller shaft; see Section 4 of the 1974 Light Duty Truck Service Manual.
2. Remove the brake drum.

   NOTE: It may be necessary to back off the shoe adjustment before removing the drum.

   On automatic transmission models, the exhaust crossover pipe may be in the way. If so, loosen the transmission rear mounting bolts and jack the transmission sufficiently for brake drum to clear the pipe.

3. Remove the two pull back springs.
4. Remove the guide plate from anchor pin.
5. Remove shoe hold down cups, springs, and washers from hold down pins--remove pins.
6. Pull brake shoe and lining assemblies away from anchor pin and remove the strut and spring.
7. Lift the brake shoes and linings with the adjusting nut and bolt and connecting spring off the flange plate.
8. Move the shoes toward each other until the adjusting bolt and connecting spring drop off.
9. Remove the clip holding the brake lever to the primary shoe (shoe with short lining).
10. Compress the spring on the brake cable and remove the cable from the lever.
11. If necessary to remove the anchor pin, straighten the washer from pin hex and reinforcement. Remove reinforcement and washer with anchor pin.
12. If necessary to remove the cable, compress tangs on cable and pull assembly out of the hole in the flange plate.
13. If necessary to remove the flange plate, remove the transmission flange nut and transmission output flange. Remove bolts holding the flange plate to bearing retainer and remove the flange plate.

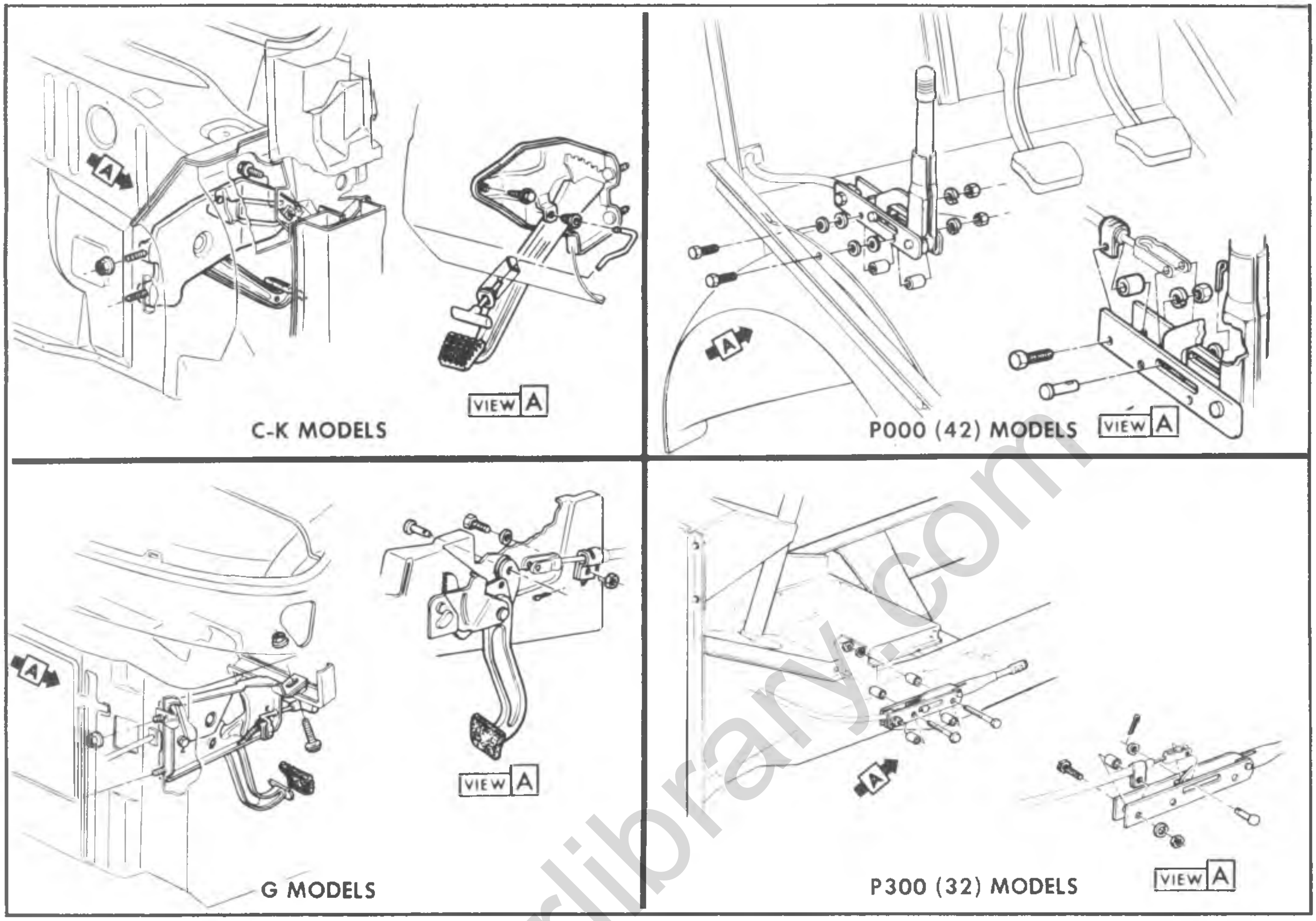


Fig. 3--Parking Brake Assembly--Typical

Inspection

Replace any worn or broken parts.

Installation

1. Place the flange plate in position on the rear bearing retainer and fasten with four bolts. Torque bolts to 24 foot pounds.

   CAUTION: *See "Caution" on Page 1 of this section.*

2. Install transmission output flange on spline of mainshaft and fasten with flange nut. Torque nut to 100 foot pounds.

   CAUTION: *See "Caution" on Page 1 of this section.*

3. Install cable assembly from back of flange plate. Push retainer through hole in flange plate until tangs securely grip the inner side of the plate.
4. Place washer and reinforcement over the threaded end of anchor pin. Hold anchor pin nut (flat side against flange on flange plate) in position behind flange plate and insert threaded end of anchor pin from front side. Thread the anchor pin into nut and tighten securely (140 foot pounds torque). Bend tang of washer over reinforcement and side of washer over hex of anchor pin.

   CAUTION: *See "Caution" on Page 1 of this section.*

5. Install lever on cable by compressing spring and inserting cable in channel of lever. Release spring.
6. Install primary shoe (short lining) to lever as follows: Place pin in lever, place washer on pin and push pin through hole in primary shoe. Fasten parts together by installing the clip in groove of pin.

   CAUTION: *See "Caution" on Page 1 of this section.*

7. Fasten two brake shoes and linings together by installing connecting spring. Move the shoes toward each other and install adjusting screw.
8. Lubricate the flange plate contact surfaces with a very light coat of Delco Brake Lube #5450032 (or equivalent).
9. Place shoe and linings in position on flange plate. NOTE: When facing the brake assembly, the shoe with the short lining should be to the left with the

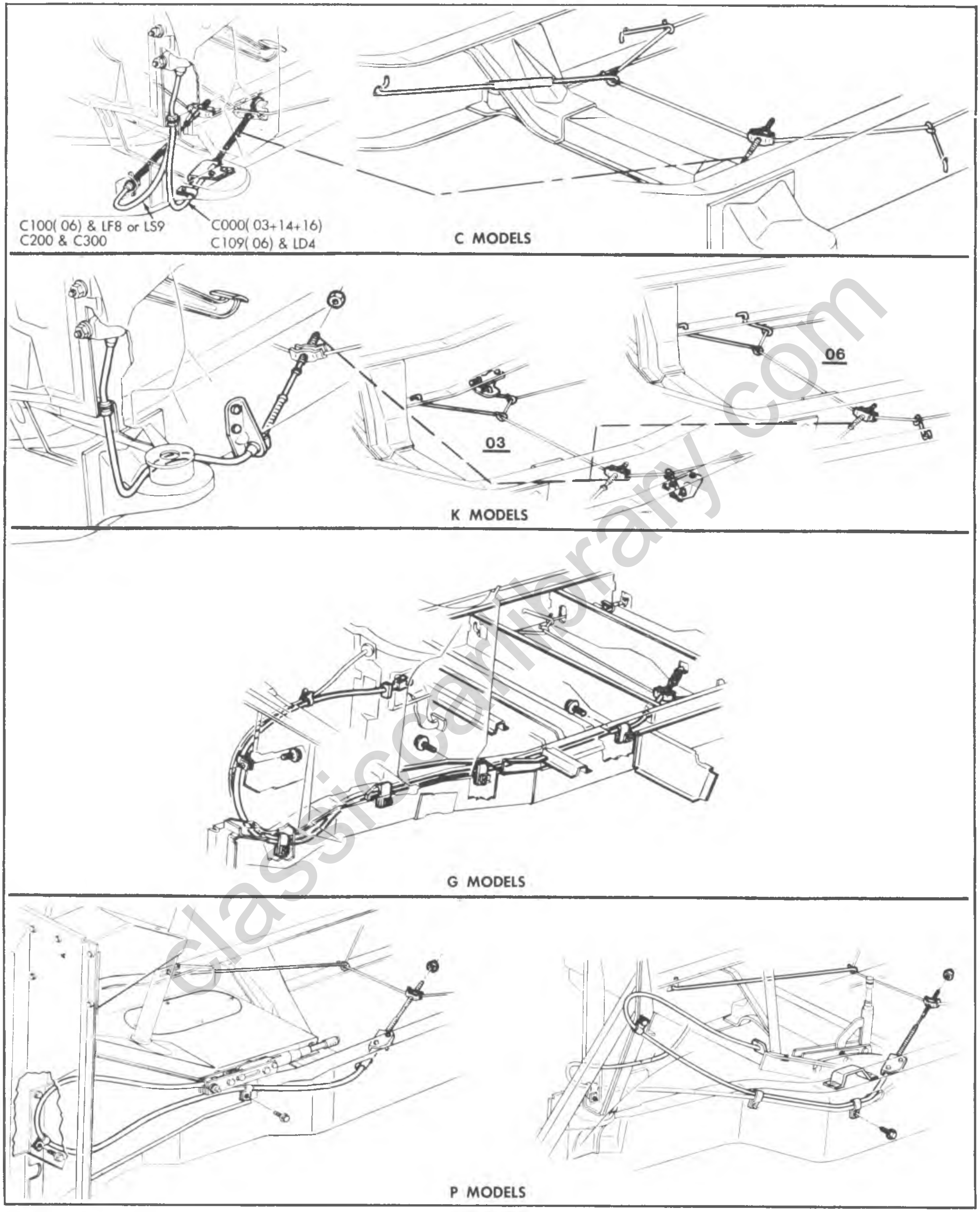


Fig. 4--Parking Brake System (Typical)

lever assembled to it (automatic transmission), to the right (manual transmission).

10. Pull brake shoes apart and install strut lever and spring between them. The loop on the strut spring should be in the "up" position.
11. Install hold down pins, washers, springs and cups from flange plate to shoes.
12. Place guide plate on anchor pin.
13. Install pull back springs.
14. Remove the "knock out" plug (if necessary) and install a new metal plug in the brake drum adjusting hole.
15. Install the brake drum.
16. Install the propeller shaft.

VACUUM POWER BRAKES

POWER BOOSTER - REPAIR OR REPLACE

CAUTION: *Any time the power brake vacuum booster is removed for repair or replacement, be sure to install a* **NEW** check valve.

HYDRO-BOOST POWER BRAKES

All 1975 "C" model hydro-boost vehicles will incorporate an accumulator which is integral with the booster (Fig. 5). "G" and "P" model trucks will incorporate boosters and accumulators which are mounted separately (see 1974 Light Duty Truck Service Manual).

INTEGRAL ACCUMULATOR/BOOSTER

The booster power section includes three ports (Fig. 6):

1. Pressure Port (11/16-18 thread)--the high pressure line from the power steering pump is connected to this port.
2. Gear Port (5/8-18 thread)--the high pressure line leading to the power steering gear is connected to this port.
3. Return Port (for 3/8 I.D. Hose)--the return line to the power steering pump is connected to this port.

The pressure port and the gear port each contains an aluminum tube seat insert.

The accumulator valve components are assembled in the accumulator valve bore which is machined in the housing. This bore is connected by passages to the accumulator and to the pressure port.

The integral spring accumulator (Fig. 7) is used in conjunction with the hydraulic brake booster. The accumulator piston assembly and spring are assembled in the accumulator bore which is machined in the housing.

WARNING: Do not attempt to disassemble or cut into the accumulator. The accumulator contains a spring compressed under high pressure.

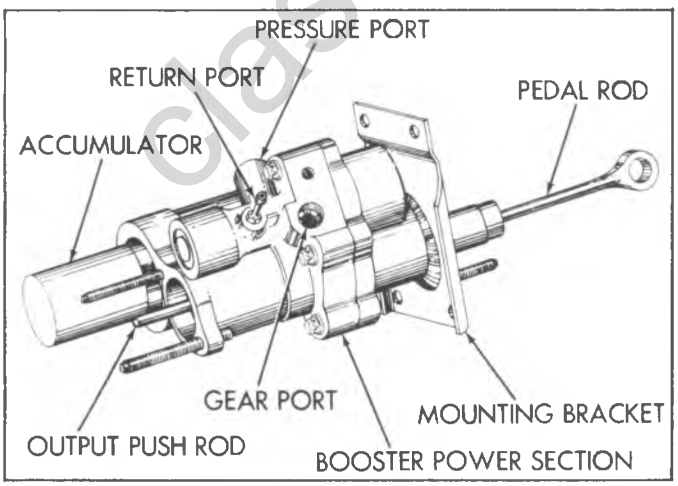


Fig. 5--Hydro-Boost With Integral Accumulator

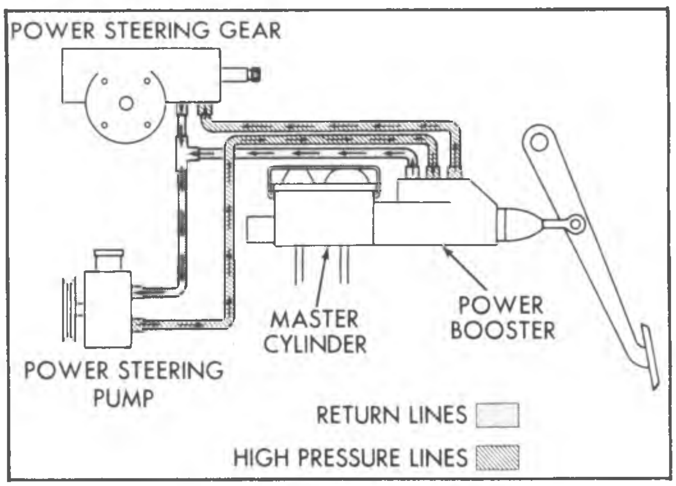


Fig. 6--Brake Booster Hydraulic Schematic

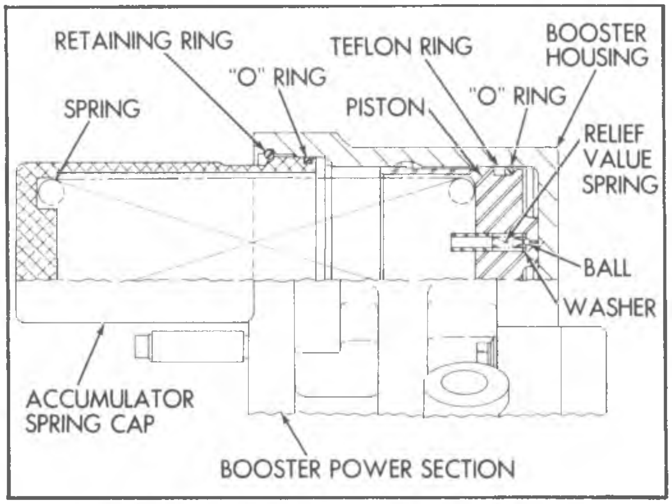


Fig. 7--Accumulator Components (Integral Booster)

BLEEDING HYDRO-BOOST/POWER STEERING HYDRAULIC SYSTEM

The following procedure should be used to bleed the power steering hydraulic system on hydro-boost vehicles.

NOTE: If the power steering fluid has foamed due to low fluid level, it will be necessary to park the vehicle for approximately one hour (reservoir cap loose) so that the foam can dissipate.

1. Raise the front of the vehicle on a hoist so that the tires are clear of the floor.
2. Check reservoir and fill with GM Power Steering Fluid (or equivalent).

   NOTE: Leave the reservoir cap off during entire bleed procedure.

3. Install a remote control starter switch so that engine can be cranked but not started.

   CAUTION: *Whenever the engine is cranked remotely at the starter, with a special jumper or other means, the distributor primary lead must be disconnected from the negative post on the coil.*

4. Crank engine for 4 to 5 second intervals while pouring fluid into the reservoir.
5. Fill reservoir and crank as in step 4 until system will no longer accept fluid. It is normal that fluid may spill when cranking stops (it is the result of air in the system trying to escape). To prevent spilling, crank engine.
6. Remove remote control starter switch. Reinstall distributor primary lead.
7. Start engine and allow to run 2 seconds.
8. Check and refill fluid reservoir if necessary.
9. Start engine and depress the brake pedal several times while rotating the steering wheel from stop to stop.
10. Turn engine off and then pump brake pedal 4-5 times to deplete accumulator pressure.
11. Check and refill fluid reservoir if necessary.
12. Repeat Steps 9, 10 and 11. Install pump reservoir cap.
13. Remove vehicle from hoist.

BRAKE PEDAL ADJUSTMENT

All hydro-boost equipped vehicles incorporate non-adjustable brake pedal rods except P30(32) models. Refer to the 1974 Light Duty Truck Service Manual for brake pedal adjustment on P30(32) models.

BOOSTER INSTALLATION

Refer to Figures 8 and 9 for booster installation.

ACCUMULATOR

As noted earlier, "C" model boosters incorporate an integral accumulator. Accumulator installation on "G" and "P" models is shown in Figure 10.

HYDRAULIC LINE ROUTING

Refer to Figure 11 for typical hydraulic line routings.

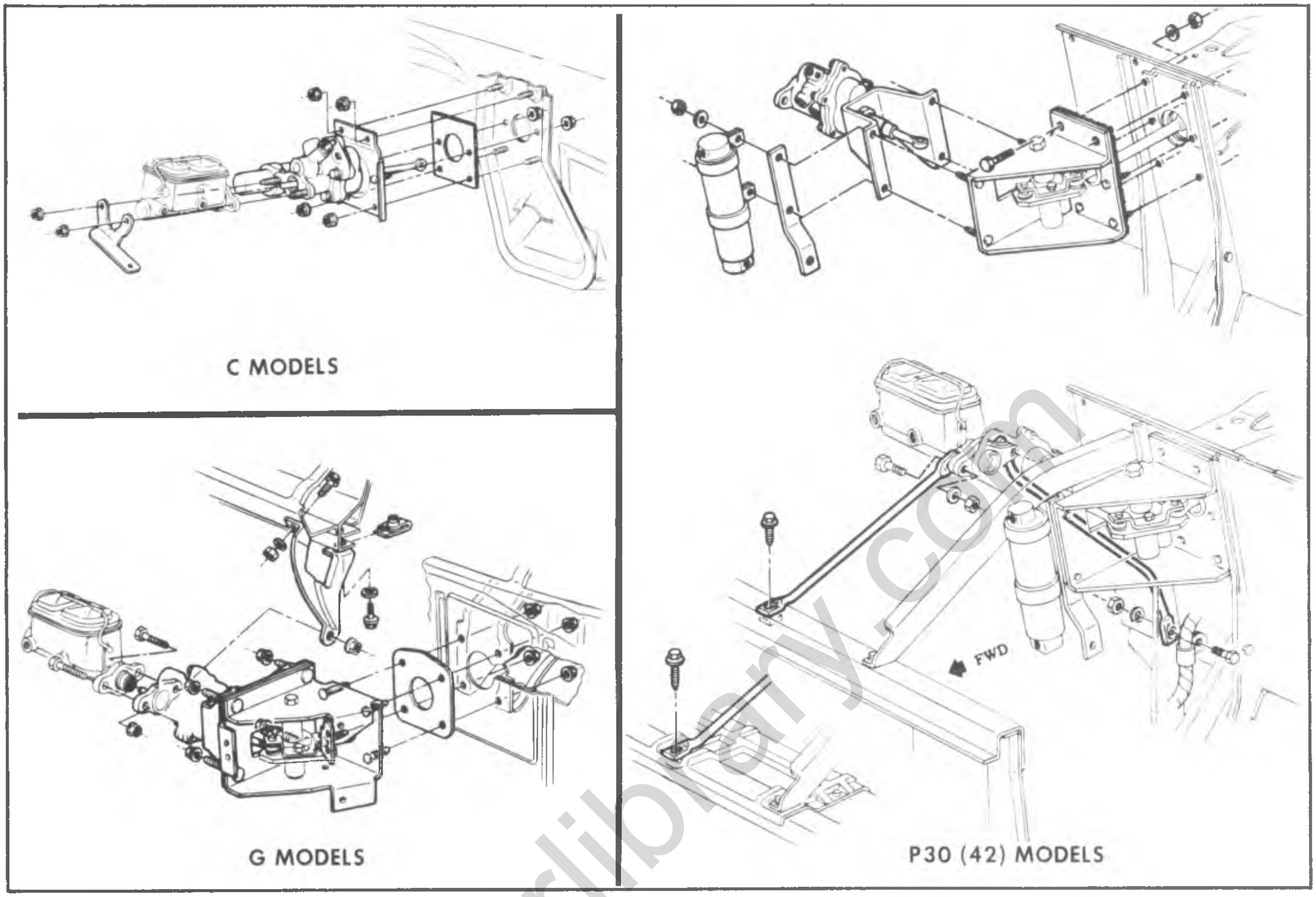


Fig. 8--Booster Installation--Except P30(32) Models

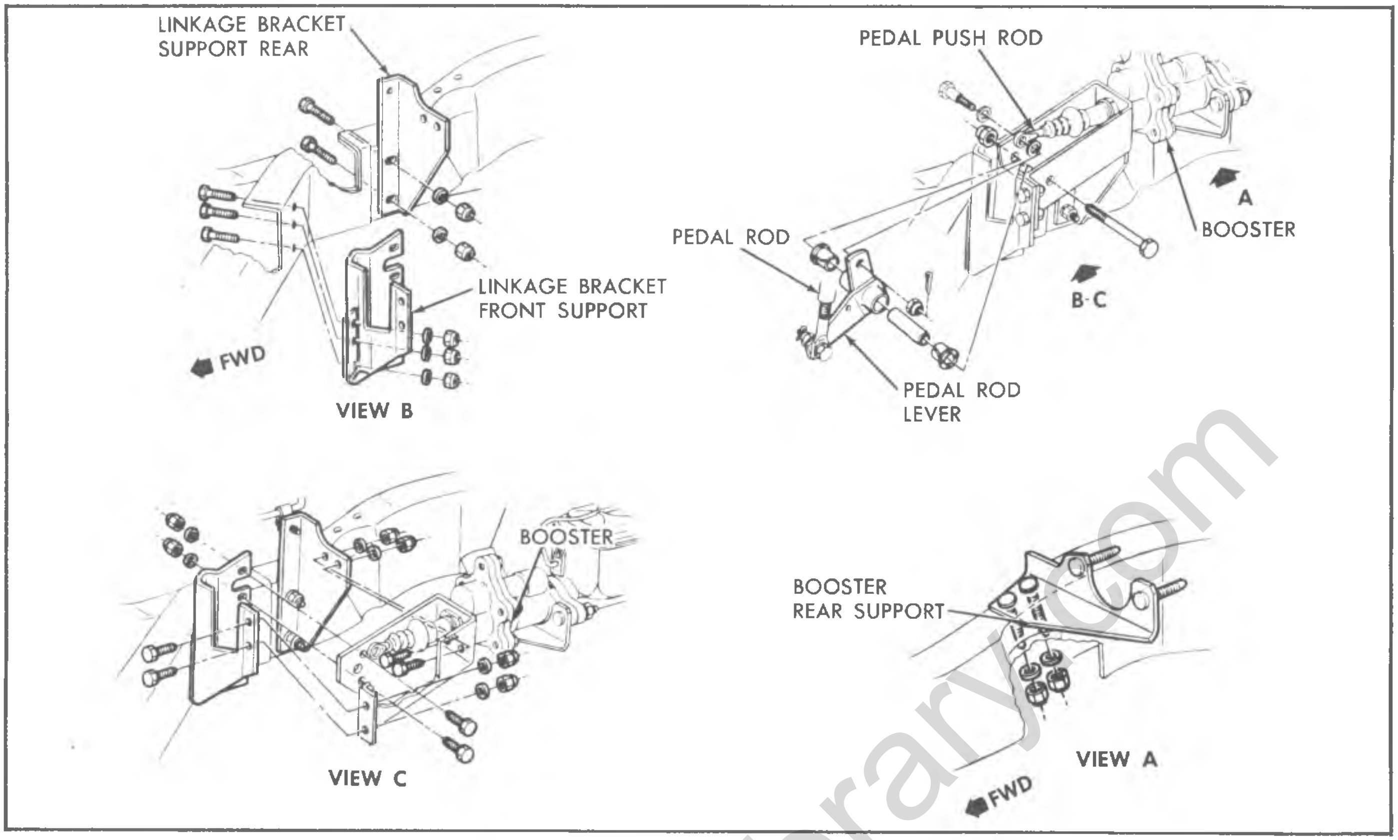


Fig. 9--Booster Installation--P30(32) Models

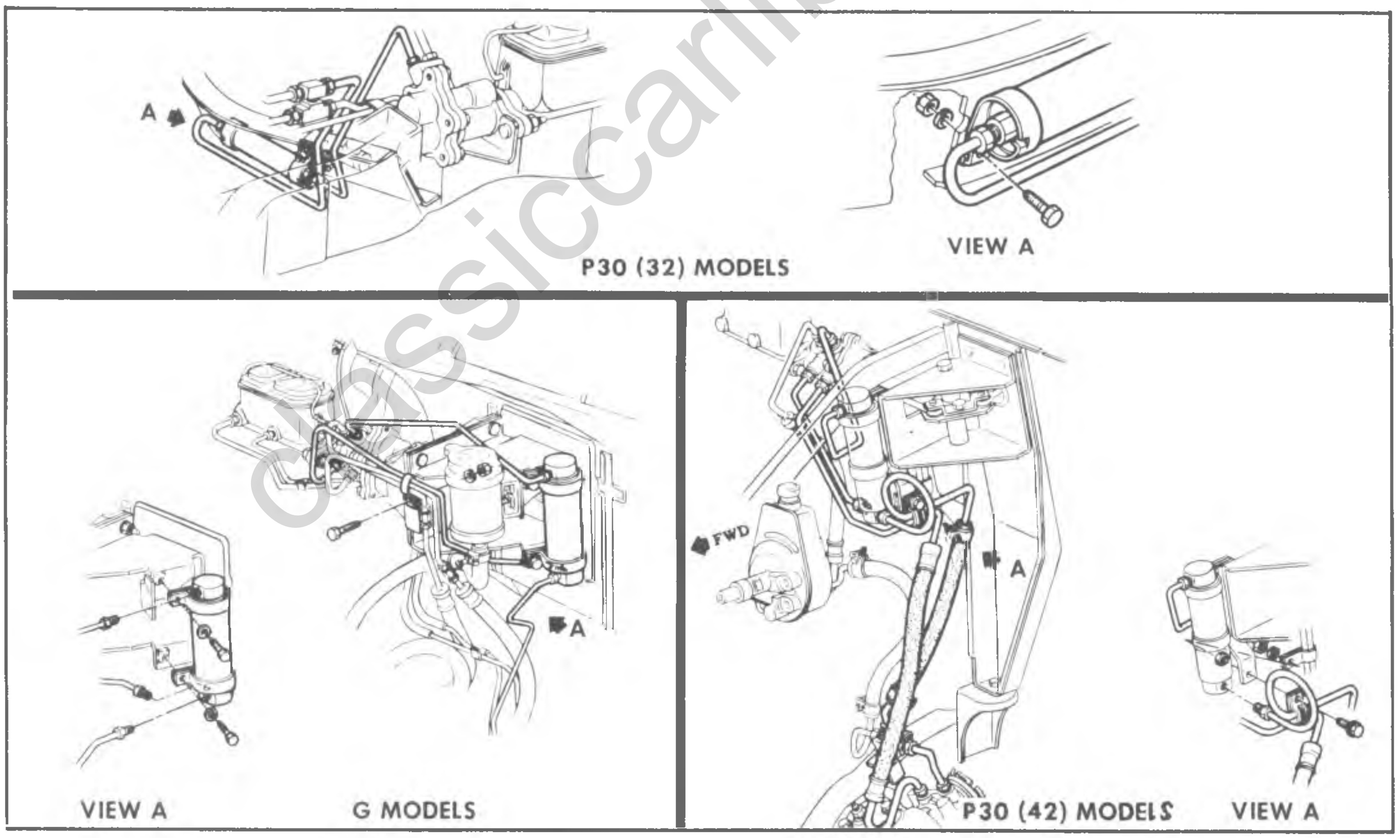


Fig. 10--Accumulator Installation

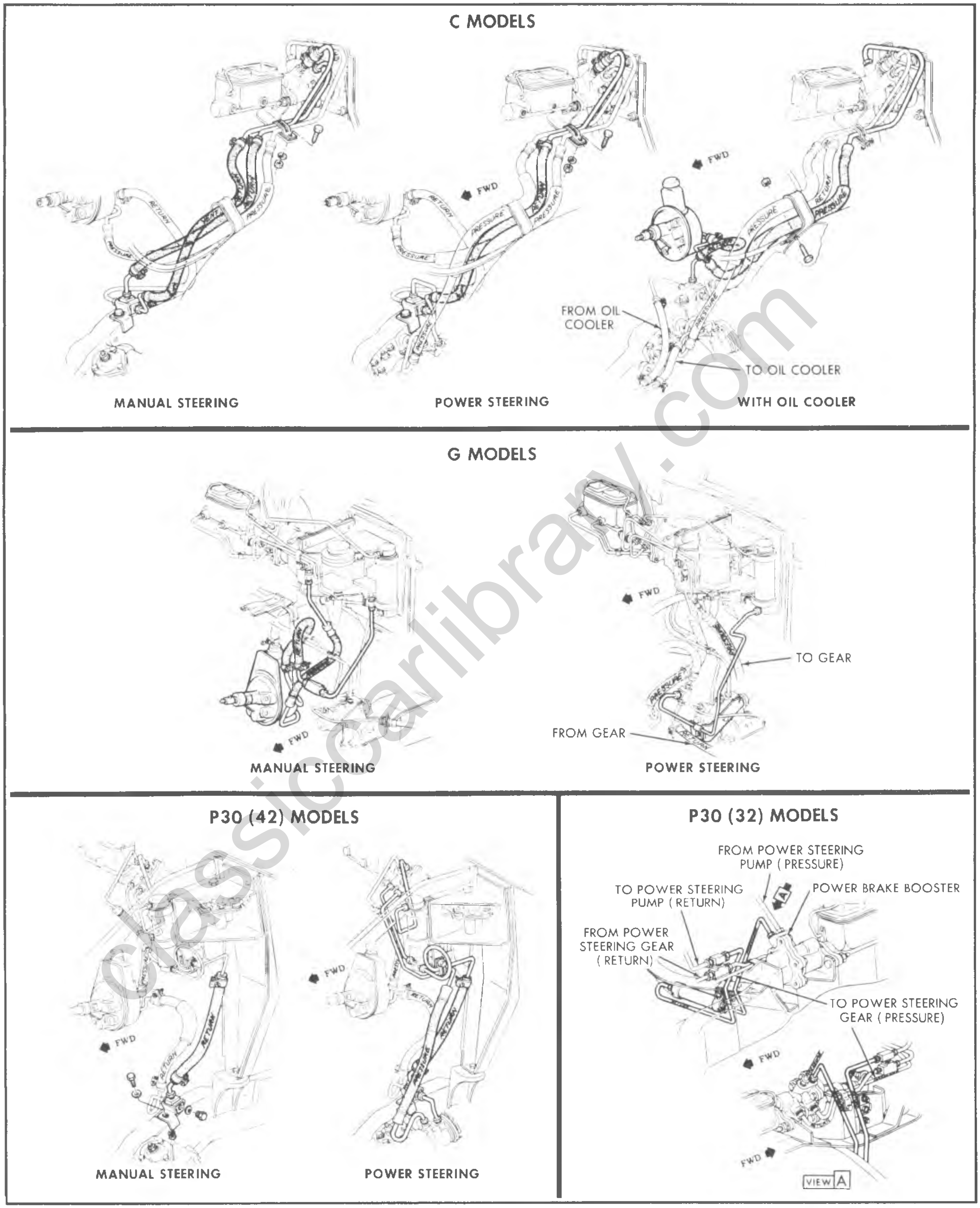


Fig. 11--Hydraulic Line Routing

DIAGNOSIS - HYDRO - BOOST SYSTEM

NOTE: *Before checking the hydraulic power booster for the source of trouble, refer to the trouble diagnosis procedures for Standard Brakes. After these possible causes have been eliminated, check for the probable cause and remedy as outlined below:*

Normal Operating Characteristics

Brake pedal application of the Hydro-boost system differs in some respects from a vacuum type power brake system in the following manner:

1. On pedal application until booster run-out, slight power steering pump noise may be heard.
2. Pedal application through run-out will not necessarily be smooth due to the internal ratio change. It is possible to push the pedal past run-out because of the higher pedal ratio. At run-out of the vacuum booster the pedal just becomes hard.
3. On the first full application of the brake pedal, a slight hissing sound may be heard. The hiss is the accumulator charging and the noise should go away in a short period of time.
4. On a spike brake application, a slight pedal kick-back may be felt.
5. If the vehicle is started with the pedal depressed, the pedal will fall away slightly then return back to approximately the original position.

NO BOOST - HARD PEDAL

Preliminary Check

With the engine stopped, depress the brake pedal several times to eliminate all accumulator reserve from the system.

Hold the brake pedal depressed with medium pressure (25 to 35 lbs.), start the engine. If the unit is operating correctly, the brake pedal will fall slightly and then push back against the driver's foot, remaining at about the same position. If the booster is not operating correctly, the trouble may be one of the following causes:

Probable Cause	Remedy
1. Loose or broken power steering pump belt.	1. Tighten or replace the belt.
2. No fluid in power steering reservoir.	2. Fill reservoir and check for external leaks.
3. Leaks in power steering, booster or accumulator hoses.	3. Replace defective parts.
4. Leaks at tube fittings, power steering, booster or accumulator connections.	4. Tighten fittings or replace tube seats, if defective.
5. External leakage at accumulator.	5. Replace accumulator (except C models - replace booster on C models).
6. Faulty booster piston seal causing leakage at booster flange vent.	6. Replace all booster seals.
7. Faulty booster input rod seal with leakage at input rod end.	7. Replace all booster seals.
8. Faulty booster cover seal with leakage between housing and cover.	8. Replace all booster seals.
9. Faulty booster spool plug seal.	9. Replace all booster seals.
10. Internal leakage in booster.	10. Replace booster.
11. Contamination in power steering fluid.	11. Flush power steering system and replace with new fluid.
12. Hydraulic lines routed incorrectly.	12. Re-route lines.

DIAGNOSIS - HYDRO - BOOST SYSTEM

SLOW BRAKE PEDAL RETURN

Probable Cause	Remedy
1. Excessive seal friction in booster.	1. Replace all booster seals.
2. Faulty spool action.	2. Clean spool and replace all booster seals.
3. Broken piston return spring.	3. Replace spring.
4. Restriction in return line from booster to pump reservoir.	4. Replace line.
5. Broken spool return spring.	5. Replace spring.
6. Excessive pedal pivot friction.	6. Lubricate pivot bushings with Delco Brake Lube #5450032 (or equivalent) or replace bushings.

GRABBY BRAKES

Probable Cause	Remedy
1. Broken spool return spring.	1. Replace spring.
2. Faulty spool action caused by contamination in system.	2. Inspect, clean and replace all booster seals.
3. No cargo body on chassis.	3. Normal condition.

BOOSTER CHATTERS - PEDAL VIBRATES

Probable Cause	Remedy
1. Power steering pump belt slips.	1. Tighten belt.
2. Low fluid level in power steering pump reservoir.	2. Fill reservoir and check for external leaks.
3. Faulty spool operation caused by contamination in system.	3. Inspect, clean and replace all booster seals.
4. Excessive contamination in power steering fluid.	4. Flush power steering fluid from system and replace with new power steering fluid.
5. Air in power steering fluid.	5. Allow vehicle to stand for approximately one hour; then bleed power steering hydraulic system as described earlier in this section.

DIAGNOSIS - HYDRO-BOOST SYSTEM

POWER STEERING PUMP NOISE ON BRAKE APPLY

Probable Cause	Remedy
1. Insufficient fluid in pump reservoir.	1. Fluid level decreases approximately 1/2" on brake apply-refill to proper level. If fluid is foamy, let vehicle stand for approximately one hour; then bleed power steering hydraulic system as outlined earlier in this section.

BRAKE PEDAL PULLS DOWN SLIGHTLY ON ENGINE START

Probable Cause	Remedy
1. Restriction in gear or booster return lines.	1. Replace lines or reposition lines to eliminate restriction.

DIAGNOSIS - HYDRO - BOOST SYSTEM

ACCUMULATOR LEAKDOWN - SYSTEM DOES NOT HOLD CHARGE

Preliminary Check

Start engine and turn the steering wheel until the wheels contact the wheel stops lightly. Hold for a maximum of five seconds. Then release the steering wheel and turn off the engine.

Depress and release the brake pedal. There should be a minimum of three power assisted brake applications before a hard pedal is obtained.

Re-start the engine and turn the steering wheel until the wheels contact the wheel stops lightly. There should be a light hissing sound as the accumulator is charged. Hold steering wheel lightly against stop for a maximum of five seconds. Then release the steering wheel, and turn off the engine.

Wait one hour and apply brake pedal (do not re-start the engine). There should still be a minimum of three power assisted brake applications before obtaining a hard pedal.

If either of these preliminary checks shows that the accumulator is not holding its charge, the trouble may be one of the following causes.

Probable Cause	Remedy
1. External leakage at accumulator welds.	1. Replace accumulator, (entire booster assembly on C models).
2. External leakage at accumulator fittings (except C models).	2. Tighten or replace fittings, as necessary.
3. Internal leakage in accumulator (past piston seal or relief valve).	3. Perform Accumulator Leakage Test as described below (except C models) - replace booster (C models).
4. Internal leakage at booster accumulator valve (if accumulator is not leaking externally or internally).	4. Replace all booster seals and accumulator valves.

Accumulator Leakage Test (P and G model vehicles)

Start the engine and turn the steering wheel until the wheels contact the wheel stops lightly. Hold for a maximum of five seconds. Release the steering wheel, and turn off the engine.

CAUTION: *Do not disconnect the fitting from the pressure side of the accumulator (this is the end connected to the booster) because the accumulator contains fluid under pressure.*

Remove the fitting from the return end of the accumulator. This is the end connected to the power steering pump reservoir. Cap the line to the pump reservoir.

Allow excess fluid to drain from the accumulator. Then re-start the engine, and hold the wheels lightly against the wheel stops. There should be no continuous flow of fluid out of the accumulator return port. If there is a continuous flow, either the accumulator piston seal or the relief valve is leaking, and the accumulator should be replaced.

SECTION 6

ENGINE MECHANICAL

IN-LINE ENGINES

INDEX

COMPONENT REPLACEMENT AND ADJUSTMENT

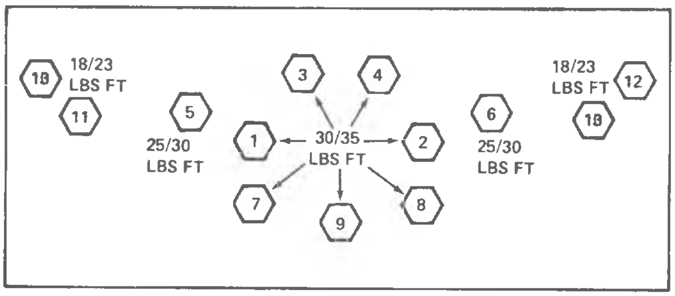


Fig. 1A—Exhaust Manifold to Cylinder Head Bolt Tightening Sequence and Torque

EXHAUST MANIFOLD ASSEMBLY

Removal

1. Remove air cleaner.
2. Remove power steering pump and/or A.I.R. pump brackets (if so equipped).
3. Remove EFE valve bracket.
4. Disconnect throttle controls and throttle return spring.
5. Disconnect exhaust pipe at manifold flange.
6. Remove manifold attaching bolts; then, remove manifold and discard gasket.
7. Check for cracks in manifold assembly.

Installation

1. Clean gasket surfaces on cylinder head and mainfold.
2. Position new gasket on exhaust manifold.
3. Install manifold assembly bolts, while holding manifold assembly in place.
4. Clean, oil and torque all manifold to cylinder head bolts and nuts to specifications (fig. 1A).
5. Connect exhaust pipe to manifold.
6. Connect throttle controls and throttles return spring.
7. Install air cleaner, start engine and check for leaks.

ENGINE MECHANICAL

V8 ENGINES

INDEX

GENERAL INFORMATION

All light duty trucks will utilize a high energy ignition system for 1975. Using this system, the conventional external ignition coil and other related components are eliminated.

Except for the following changes, all information listed in Section 6 Engine of the 1974 Light Duty Truck Service Manual is applicable to 1975 light duty truck models.

COMPONENT REPLACEMENT AND ADJUSTMENT

INTAKE MANIFOLD

The intake manifold removal and installation procedure remains basically the same except that a new carburetor heat choke tube assembly is used. Upon transfering components on a manifold replacement operation the choke tube assembly must be removed and (with a new gasket) transfered to new manifold.

CRANKCASE FRONT COVER

The installation procedure for the small V8 crankcase front cover has been revised. The removal procedure as outlined on page 6-56 of the 1974 Light Duty Truck Service Manual remains the same. The revised installation procedure is as follows:

Installation

1. Clean gasket surface on block and crankcase front cover.
2. Use a sharp knife or other suitable cutting tool to remove any excess oil pan gasket material that may be protruding at the oil pan to engine block junction.
3. Apply a 1/8" bead of silicone rubber sealer, part number 1051435 (or equivalent) to the joint formed at the oil pan and cylinder block, as well as the entire oil pan front lip (fig. 1R).
4. Coat the cover gasket with gasket sealer and place in position on cover.
5. Loosely install cover-to-block.

   NOTE: Insert the top four bolts loosely (approximately 3 turns). Install two 1/4-20 x 1/2" screws one on each side at the lower hole in the front cover. Apply a bead of silicone sealer on the bottom of the seal and install on cover (fig. 2R).

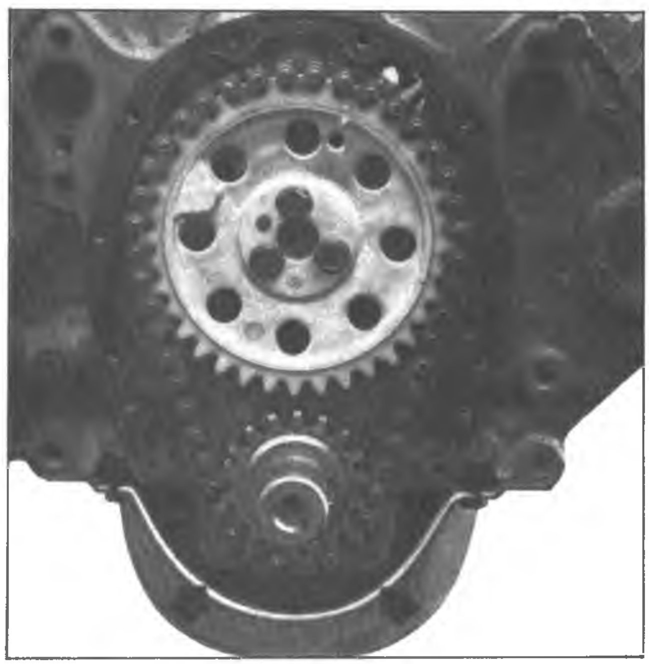


Fig. 1R—Areas to Apply Front Cover Sealant

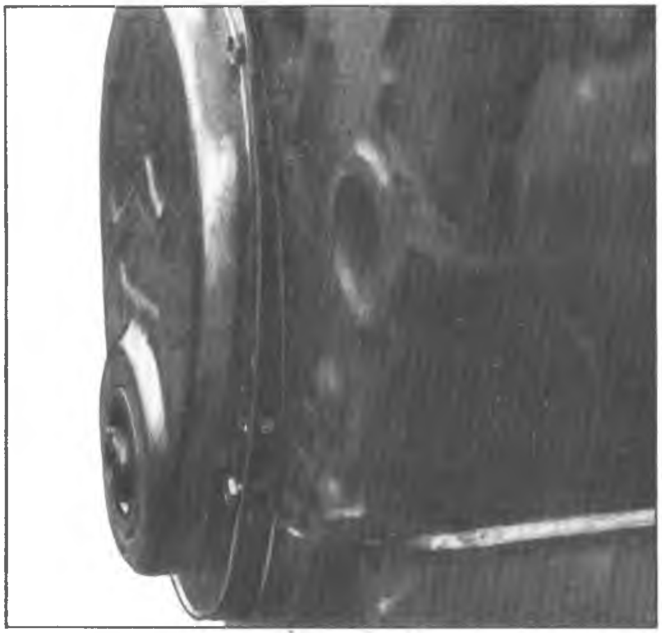


Fig. 2R—Installing Front Cover and Seal

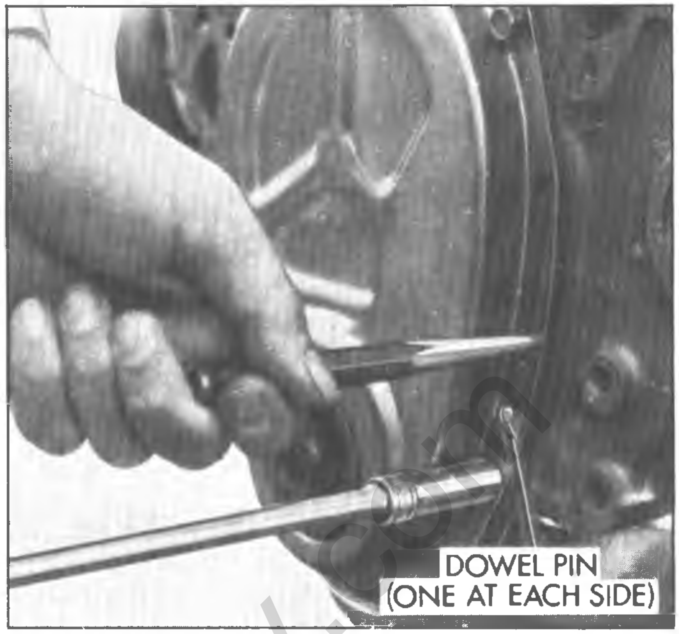


Fig. 3R—Aligning Cover to Dowel Pins

6. Tighten screws alternately and evenly while using drift or other suitable tool to align dowel pins in block to corresponding holes in cover (fig. 3R).
7. Remove the two 1/4-20 x 1/2" screws previously used to draw up cover and install remaining cover screws.
8. Complete installation as outlined in the 1974 Passenger Car Service Manual.

DIAGNOSIS

ENGINE FAILS TO START

a. Clean and tighten loose battery terminal connections. Using battery hydrometer, check specific gravity, if low, recharge battery.

b. Check for broken or loose ignition wires and/or ignition switch and repair or replace as necessary.

c. Remove moisture from spark plug wires and/or distributor cap.

d. Inspect condition of distributor cap and rotor. Replace if damaged or cracked.

e. Check inspect and regap spark plugs. Replace as necessary.

f. Check for weak or faulty H.E.I. System Coil as outlined in Section 6Y of this manual.

g. Check carburetor float level, operation of secondary vacuum break solenoid, air valve and enrichment system as outlined in Section 6M of this manual.

h. Inspect carburetor fuel filter for presence of water and/or impurities. Correct as necessary.

i. Check choke mechanism for proper operation. Any binding condition which may have developed due to petroleum gum formation on the choke shaft or from damage should be corrected.

j. Check fuel pump for leaks and proper operation. Correct as necessary.

k. Check operation of starter motor and solenoid. Repair or replace as necessary.

l. Inspect park or neutral safety switch. Adjust or replace as necessary.

m. Check operation of EFE valve as outlined in Section 6T of this manual. Repair or replace as necessary.

n. Check for air or vacuum leaks. Correct as necessary.

ENGINE LOPES WHILE IDLING

a. Check for vacuum leaks and correct as necessary.

b. Check for blown head gasket and repair as necessary.

c. Inspect condition of camshaft, timing chain and/or sprockets. Replace as necessary.

d. Check engine operating temperature and correct as necessary.

e. Check the PCV system for satisfactory operation. Correct as necessary.

f. Check fuel pump for leaks and proper operation. Correct as necessary.

g. Check operation of Exhaust Gas Recirculation valve. Repair or replace as necessary.

h. Check ignition timing and operation of the H.E.I. system as outlined in Section 6Y of this manual. Correct as necessary.

i. Check carburetor for incorrect idle speed, defective altitude compensator, sticking choke or enrichment system and adjust, repair or replace as necessary.

j. Check operation of EFE valve as outlined in Section 6T of this manual. Repair or replace as necessary.

k. Check inspect and regap spark plugs. Replace if necessary.

ENGINE MISSES WHILE IDLING

a. Check, inspect and regap spark plugs. Replace as necessary.

b. Remove moisture from spark plug wires and/or distributor cap.

c. Check for broken or loose ignition wires. Repair or replace as necessary.

d. Check condition of cylinders for uneven compression. Repair as necessary.

e. Check for weak or faulty HEI system coil as outlined in Section 6Y of this manual.

f. Inspect condition of distributor cap and rotor. Replace if damaged or cracked.

g. Check carburetor for internal obstructions, incorrect idle speed, faulty altitude, compensator sticking choke or enrichment system and adjust, repair or replace as necessary.

h. Inspect carburetor fuel filter for presence of water and/or impurities and correct as necessary.

i. Check carburetor mounting gasket for air leaks. Repair as necessary.

j. Check distributor spark advance mechanism for proper operation. Repair or replace as necessary.

k. Inspect valve train components. Adjust, repair and/or replace as necessary.

l. Check engine for low compression. Repair as necessary.

m. Check operation of exhaust gas recirculation valve. Repair or replace as necessary.

n. Check ignition timing, and condition of ignition system as outlined in Section 6Y of this manual. Correct as necessary.

o. Check for vacuum leaks. Correct as necessary.

p. Check operation of EFE valve as outlined in Section 6T of this manual. Repair or replace as necessary.

ENGINE MISSES AT VARIOUS SPEEDS

a. Inspect carburetor fuel filter for presence of water and/or impurities. Correct as necessary.

b. Check fuel system for leaks, plugged fuel lines incorrect fuel pump pressure and/or plugged carburetor jets. Correct as necessary.

c. Check ignition timing. Correct as necessary.

d. Check for excessive play in distributor shaft. Repair or replace as necessary.

e. Check for weak or faulty H.E.I. system coil as outlined in Section 6Y of this manual.

f. Check, inspect and regap spark plugs. Replace as necessary.

g. Detonation and pre-ignition may be caused by using sub-standard fuel. Correct as necessary.

h. Check for weak valve springs and condition of camshaft lobes. Repair or replace as necessary.

i. Check engine operating temperature. Correct as necessary.

j. Check operation of exhaust gas recirculation valve. Repair or replace as necessary.

k. Inspect distributor cap for evidence of carbon tracking. Replace if necessary.

l. Check for faulty altitude compensator and incorrect carburetor adjustments. Correct as necessary.

m. Check for vacuum leaks. Correct as necessary.

n. Check operation of EFE valve as outlined in Section 6T of this manual. Repair or replace as necessary.

ENGINE STALLS

a. Check carburetor for incorrect and/or misadjusted idle speed, float level, leaking needle and seat, air valve, sticking choke or enrichment system and secondary vacuum break operation. Adjust, repair or replace as necessary.

b. Inspect carburetor fuel filter for presence of water and/or impurities. Correct as necessary.

c. Check H.E.I. system as outlined in Section 6Y of this manual.

d. Check, inspect and regap spark plugs. Replace as necessary.

e. Check distributor spark advance mechanism for proper operation. Repair or replace as necessary.

f. Inspect exhaust system for restrictions. Correct as necessary.

g. Check carburetor mounting gasket for air leaks. Repair as necessary.

h. Check and adjust valve lash.

i. Check for burned, warped or sticking valves. Repair or replace as necessary.

j. Check engine for low compression. Repair as necessary.

k. Check engine operating temperature. Correct as necessary.

l. Check for loose, corroded or leaking wiring connections (bulk-head connectors etc.) Repair as necessary.

m. Check operation of exhaust gas recirculation system. Repair or replace as necessary.

n. Check fuel system for leaks and/or obstructions. Repair as necessary.

o. Check for vacuum leaks. Correct as necessary.

p. Check operation of EFE valve as outlined in Section 6T of this manual. Repair or replace as necessary.

ENGINE HAS LOW POWER

a. Check for weak or faulty H.E.I. system coil as outlined in Section 6Y of this manual.

b. Check ignition timing. Correct as necessary.

c. Check for excessive play in distributor shaft. Repair or replace as necessary.

d. Check, inspect and regap spark plugs. Replace as necessary.

e. Check carburetor for incorrect and/or misadjusted idle speed, float level, leaking needle and seat, air valve and sticking choke or enrichment system. Adjust, repair or replace as necessary.

f. Inspect carburetor fuel filter for presence of water and/or impurities. Correct as necessary.

g. Check fuel pump for leaks and proper operation. Correct as necessary.

h. Check for sticking valves, weak valve springs, incorrect valve timing, lifter noise and worn camshaft lobes. Adjust, repair or replace as necessary.

i. Check for insufficient piston to bore clearance. Correct as necessary.

j. Check condition of cylinders for uneven compression and/or blown head gasket. Repair as necessary.

k. Check power steering flow control valve operation. Repair or replace as necessary.

l. Check for clutch slippage (vehicles with manual transmissions) and adjust or replace as necessary.

m. Check hydraulic brake system for proper operation. Correct as necessary.

n. Check engine operating temperature. Correct as necessary.

o. Check pressure regulator valve (automatic transmission) for proper operation. Repair as necessary.

p. Check transmission fluid level. Correct as necessary.

q. Loss of power may be caused by using sub-standard fuel. Correct as necessary.

r. Check operation of EFE valve as outlined in Section 6T of this manual. Repair or replace as necessary.

s. Check operation of diverter valve (A.I.R. system). Repair or replace as necessary.

t. Check for engine vacuum leaks. Correct as necessary.

ENGINE DIESELING ON SHUT OFF

a. Check base idle speed for improper adjustment and correct as necessary.

b. Check ignition timing and reset to specifications if required.

c. Check idle mixture setting and correct as necessary.

d. Check accelerator and choke linkage operation and correct as necessary.

e. Check engine operating temperature and correct as necessary.

f. Check thermac valve for sticking and correct as necessary.

ENGINE DETONATION

a. Check for overadvanced ignition timing and/or faulty ignition system and correct as necessary.

b. Check for loose or improper application of spark plugs, or spark plugs with cracked or broken ceramic cores and replace as necessary.

c. Check for the use of sub-standard fuel and correct as necessary.

d. Check for foreign material in fuel lines and/or carburetor and correct as necessary.

e. Check for restricted fuel delivery to carburetor (pinched lines, faulty fuel tank cap or pick-up) and correct as necessary.

f. Check fuel pump operation and replace if necessary.

g. Check EFE system operation and repair or replace as necessary.

h. Check EGR system operation and correct as necessary.

i. Check thermostatically controlled air cleaner operation and correct as necessary.

j. Check P.C.V. system operation and correct as necessary.

k. Check for vacuum leaks and repair or replace as necessary.

l. Check engine operating temperature and correct as necessary.

m. Check for excessive combustion chamber deposits and correct as necessary.

n. Check for leaking, sticking, or broken valves and repair or replace as necessary.

EXTERNAL OIL LEAKAGE

a. Check for improperly seated or fuel pump gasket. Replace as necessary.

b. Check for improperly seated or broken push rod cover gasket. Replace as necessary.

c. Check for improperly seated or broken oil filter gasket. Replace as necessary.

d. Check for broken or improperly seated oil pan gasket. Replace as necessary.

e. Inspect gasket surface of oil pan to be bent or distorted. Repair or replace as necessary.

f. Check for improperly seated or broken timing chain cover gasket. Replace as necessary.

g. Inspect timing cover oil seal. Replace if necessary.

h. Check for worn or improperly seated rear main bearing oil seal. Replace if necessary.

i. Inspect for loose oil line plugs. Repair or replace if necessary.

j. Check for engine oil pan drain plug improperly seated. Correct as necessary.

k. Inspect camshaft rear bearing drain hole for obstructions. Correct as necessary.

l. Check for loose rocker arm cover, broken, or cover distorted or bent. Correct as necessary.

m. Check EFE valve switch for leakage. Replace if necessary.

n. Check oil pressure switch for leakage. Replace if necessary.

EXCESSIVE OIL CONSUMPTION DUE TO OIL ENTERING COMBUSTION CHAMBER THROUGH HEAD AREA

a. Check for intake valve seals to be damaged, missing or loose. Repair or replace as necessaary.

b. Check for worn valve stems or guides. Repair as necessary.

c. Inspect for plugged oil drain back holes in head. Correct as necessary.

d. Inspect PCV system operation. Correct as necessary.

EXCESSIVE OIL CONSUMPTION DUE TO OIL ENTERING COMBUSTION CHAMBER BY PASSING PISTON RINGS

a. Check engine oil level too high. Correct as necessary.

b. Check for excessive main or connecting rod bearing clearance and correct as necessary.

c. Check for piston ring gaps not staggered and correct as necessary.

d. Check for incorrect size rings installed and correct as necessary.

e. Check for piston rings out of round, broken or scored and replace as necessary.

f. Inspect insufficient piston ring tension due to engine overheating and replace as necessary.

g. Check for ring grooves or oil return slots clogged and corrected as necessary.

h. Inspect rings sticking in ring grooves of piston and correct as necessary.

i. Inspect ring grooves worn excessively in piston and correct as necessary.

j. Inspect compression rings installed upside down and correct as necessary.

k. Check for excessively worn or scored cylinder walls and correct as necessary.

l. Inspect oil too thin and replace if necessary.

m. Inspect mis-match of oil ring expander and rail and correct as necessary.

NO OIL PRESSURE WHILE IDLING

a. Check faulty oil gauge sending unit, and correct as necessary.

b. Check for oil pump not functioning properly. (Regulator ball stuck in position by foreign material) and correct as necessary.

c. Inspect for excessive clearance at main and connecting rod bearings and correct as necessary.

d. Inspect for loose camshaft bearings and correct as necessary.

e. Inspect leakage at internal oil passages and correct as necessary.

NO OIL PRESSURE WHILE ACCELERATING

a. Check low oil level in oil pan and correct as necessary.

b. Inspect leakage at internal oil passages and correct as necessary.

c. Check oil pump suction screen loose or fallen off and correct as necessary.

BURNED, STICKING OR BROKEN VALVES

a. Check for weak valve springs and replace as necessary.

b. Check for improper valve lifter clearance and adjust as necessary.

c. Check for improper valve guide clearance and/or worn valve guides and correct as necessary.

d. Check for out-of-round valve seats or incorrect valve seat width and correct as necessary.

e. Check for deposits on valve seats and/or gum formation on stems or guides and correct as necessary.

f. Check for warped valves or faulty valve forgings and correct as necessary.

g. Check for exhaust back pressure and correct as necessary.

h. Check improper spark timing and correct as necessary.

i. Check excessive idling and correct as necessary.

NOISY VALVES

a. Check and adjust valve lash if necessary.

b. Check for excessively worn, dirty or faulty valve lifters. Replace if necessary.

c. Check for worn valve guides. Repair as necessary.

d. Check for excessive run-out of valve seat or valve face. Repair as necessary.

e. Check for worn camshaft lobes. Replace camshaft if necessary.

f. Inspect for pulled or loose rocker arm studs. Repair or replace as necessary.

g. Check for bent push rods. Replace if necessary.

h. Inspect for broken valve spring. Replace if necessary.

NOISY PISTONS AND RINGS

a. Check for excessive piston to bore clearance. Correct as necessary.

b. Inspect for improper fit of piston pin. Correct as necessary.

c. Inspect for excessive accumulation of carbon in combustion chamber or on piston tops. Clean and/or repair as necessary.

d. Check for connecting rods alignment. Correct as necessary.

e. Inspect for excessive clearance between rings and grooves. Repair or replace as necessary.

f. Check for broken piston rings. Replace as necessary.

BROKEN PISTONS AND/OR RINGS

a. Check for undersize pistons. Replace if necessary.

b. Check for wrong type and/or size rings installed. Replace if necessary.

c. Check for tapered or eccentric cylinder bores. Correct as necessary.

d. Check connecting rod alignment. Replace if necessary.

e. Check for excessively worn ring grooves. Replace if necessary.

f. Check for improperly assembled piston pins. Replace as necessary.

g. Check for insufficient ring gap clearance. Correct as necessary.

h. Inspect for engine overheating. Correct as necessary.

i. Check for sub-standard fuel. Correct as necessary.

j. Check ignition timing. Correct as necessary.

NOISY CONNECTING RODS

a. Check connecting rods for improper alignment and correct as necessary.

b. Check for excessive bearing clearance and correct as necessary.

c. Check for eccentric or out-of-round crankshaft journals and correct as necessary.

d. Check for insufficient oil supply and correct as necessary.

e. Check for low oil pressure and correct as necessary.

f. Check for connecting rod bolts not tightened correctly and correct as necessary.

NOISY MAIN BEARINGS

a. Check low oil pressure and/or insufficient oil supply and correct as necessary.

b. Check for excessive bearing clearance and correct as necessary.

c. Check for excessive crankshaft end play and correct as necessary.

d. Check for eccentric or out-of-round crankshaft journals and correct as necessary.

e. Check for sprung crankshaft and replace if necessary.

f. Check for excessive belt tension and adjust as necessary.

g. Check for loose torsional damper and replace as necessary.

NOISY VALVE LIFTERS

a. Check for broken valve springs and replace as necessary.

b. Check for worn or sticking rocker arms and repair or replace as necessary.

c. Check for worn or bent push rods and replace as necessary.

d. Check for valve lifters incorrectly fitted to bore size and correct as necessary.

e. Check faulty valve lifter plunger or push rod seat and replace lifters as necessary.

f. Check for plungers excessively worn causing fast leakdown under pressure and replace as necessary.

g. Check for excessively worn camshaft lobes and replace if necessary.

h. Check valve lifter oil feed holes plugged causing internal breakdown and correct as necessary.

i. Check faulty valve lifter check ball. (nicked, flat spot, or out of round and replace as necessary.

j. Check rocker arm retaining nut to be installed upside down and correct as necessary.

k. Check for end of push rod excessively worn or flaked and replace as necessary.

SECTION 6M

ENGINE FUEL

CONTENTS OF THIS SECTION

1MV MONOJET CARBURETOR

INDEX

GENERAL DESCRIPTION

The Monojet carburetor is a single bore downdraft carburetor (fig. 1) using a triple venturi in conjunction with a plain tube nozzle.

The main venturi is 1-5/16" in diameter and the throttle bore is 1-11/16".

Fuel flow through the main metering system is controlled by a main well air bleed and a variable orifice jet. A power enrichment system is used to provide good performance during moderate to heavy accelerations and at higher engine speeds.

The idle system incorporates a hot idle compensator (A.T. only) to maintain smooth engine idle during periods of extreme hot engine operation.

The model MV incorporates an automatic choke system. The vacuum diaphragm units are mounted externally on the air horn and connect to the thermostatic coil lever through a connecting link.

The automatic choke coil is manifold mounted and connects to the choke valve shaft by a rod.

An integral, pleated-paper fuel inlet filter is mounted in the fuel bowl behind the fuel inlet nut to give maximum filtration of incoming fuel.

The Monojet carburetor has an aluminum throttle body for decreased weight and improved heat distribution and a thick throttle body to bowl insulator gasket to keep excessive engine heat from the float bowl. The carburetor has internally balanced venting through a vent hole in the air horn, which leads from the float bowl into the bore beneath the air cleaner.

The carburetor model identification is stamped on a vertical portion of float bowl, adjacent to fuel inlet nut

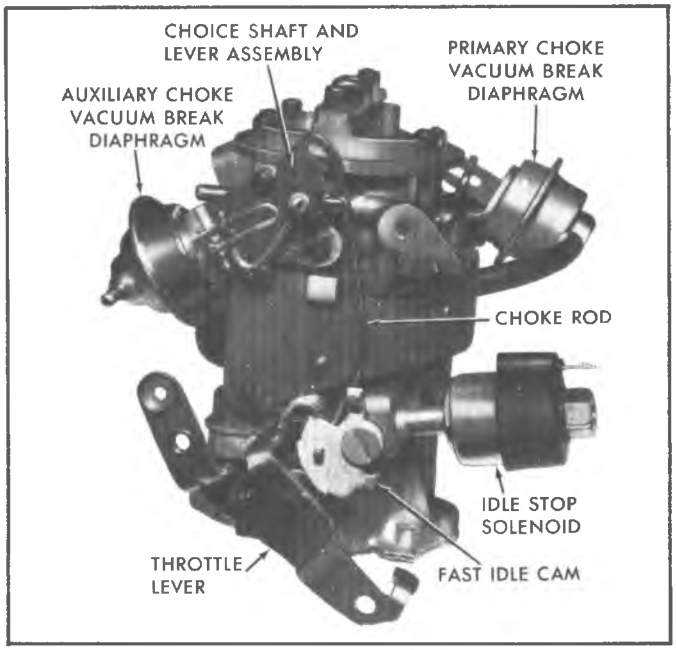


Fig. 1—1MV Monojet Carburetor

(Figure 1). If replacing float bowl, follow manufacturer's instructions contained in the service package so that the identification number can be transferred to the new float bowl.

An electrically operated idle stop solenoid is used on all 1MV models. Dual throttle return springs are used on all carburetors.

All carburetor models have an idle mixture-screw and limiter. The plastic limit cap permits idle mixture screw to be adjusted leaner without breaking the cap. At carburetor overhaul, the mixture may be adjusted.

CAUTION: *Do not bend the mixture screw when cutting the tang.*

To get the best idle and keep emissions within standards set by law, always follow adjustment procedures and specifications, see "Idle Mixture Adjustment".

A bracket for the 1MV dual throttle return springs is added to the float bowl, secured by two tapered screws installed in the upper holes of the bracket and by a flat head screw installed in the lower hole of the bracket. (Figure 2).

CAUTION: *The throttle return spring bracket screws must be installed in the proper locations.*

The throttle lever has a spun-in plastic bushing, this is used as the bearing surface for the dual throttle return springs. The spin-in plastic return spring bushing will withstand normal cleaning time in an approved cold immersion type carburetor cleaner. The bushing is not serviced separately and should not be removed from the carburetor throttle lever.

An Exhaust Gas Recirculation system (E.G.R.) is used on some applications to control oxides of nitrogen depending on truck model.

The vacuum supply port necessary to operate the recirculation valve is located in the throttle body and connects through a channel to a tube which is located at the top of the air horn casting. See Idle System for port location and operation

Six basic systems of operation are used: float, idle, main metering, power enrichment, pump and choke.

THEORY OF OPERATION

INDEX

FLOAT SYSTEM (Fig. 2)

The float system controls the amount and level of the fuel in the carburetor float bowl. Higher than specified fuel levels can cause flooding, hard, hot starting, rich fuel mixtures causing poor economy, nozzle drip at idle and stalling. Therefore, it is important that the float be set to recommended specifications.

The float system on the Monojet carburetor is located adjacent to the main venturi. It is designed so that angular maneuvers such as steep hills and sharp turns will not affect proper operation by keeping an adequate supply of fuel in the bowl at all times. The float system consists of the following: a fuel inlet filter and pressure relief spring, a solid single pontoon float made of special lightweight plastic, a conventional needle and seat and a float hinge pin. The float hinge pin fits in dual slots cast in the float bowl and is held in place by compression of the air horn gasket against the upper loop of the hinge pin.

The float operates as follows: fuel from the engine fuel pump is forced through the paper fuel inlet filter, located behind the fuel inlet nut, passes from the filter chamber up through the float needle seat and spills into the float bowl; as the float bowl fills with fuel, it lifts the float pontoon upward until the correct fuel level is reached in

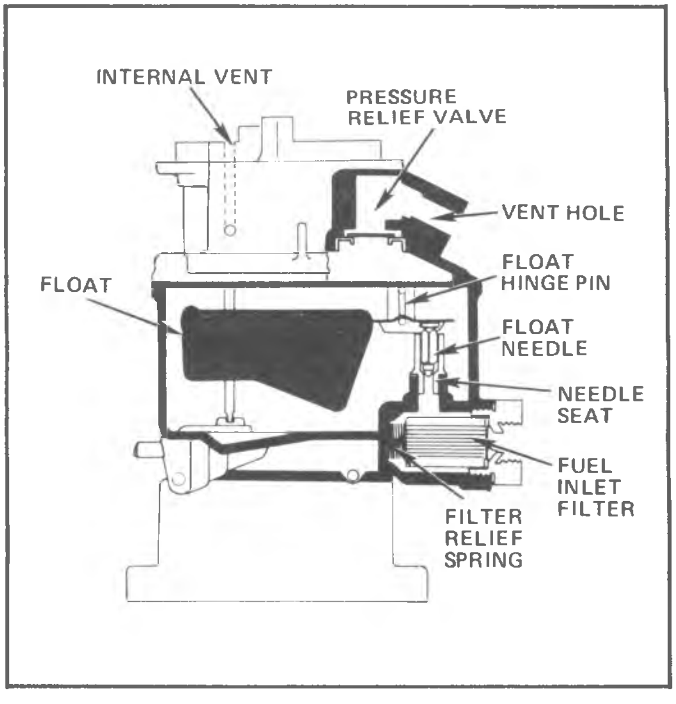


Fig. 2—Float System

the float bowl. At this point, the float arm forces the float needle against the float needle seat, shutting off fuel flow. As fuel is used from the float bowl, the float drops downward, allowing the float needle to move off its seat and more fuel to enter the float bowl. This cycle continues throughout engine operation, constantly maintaining a positive fuel level in the float bowl.

The fuel inlet filter has a pressure relief spring located at the rear of the filter. It seats between the rear of the filter and the inlet casting. Should the filter become clogged from improper servicing or excess dirt in the system, the relief spring lets the filter move off its seat. This prevents complete stoppage of fuel flow to the carburetor until the filter can be replaced.

The carburetor float chamber is internally vented through a hole located in the air horn above the float chamber. The purpose of the internal vent is to balance air pressure on the fuel in the float bowl with carburetor inlet air. With this feature, a balanced air/fuel mixture ratio can be maintained during part throttle and power operation because the air pressure acting on the fuel in the float bowl will be balanced with the air flowing through the carburetor bore.

The carburetor float chamber is externally vented by a small plastic pressure relief valve located at the top of the air horn. Should excessive vapor pressure build up in the float bowl during periods of hot engine idle or hot soak, the valve will be pushed off its seat, allowing the pressure to be relieved, there-by preventing fuel from being forced from the float bowl into the engine.

IDLE SYSTEM (Fig. 3)

The purpose of the idle system is to control fuel mixtures to the engine during idle and low speed operation. The idle system is needed during this period because air requirements of the engine are not great enough to obtain efficient metering from the main discharge nozzle and venturi system.

The idle system consists of a removable idle tube, idle passages, idle channel restriction, idle air bleeds, slotted off-idle port, vapor canister purge ports, exhaust gas recirculation (E.G.R.) ports and passages, idle mixture adjusting needle and the idle mixture discharge hole.

During curb idle, the throttle valve is held slightly open by the idle stop solenoid. The small amount of air, which passes between the throttle valve and bore, is regulated by solenoid to provide the correct engine idle speed. Since the engine requires very little air and fuel for idle and low speed operation, fuel is mixed by direct application of engine manifold vacuum to the idle discharge hole just below the throttle valve. With the idle discharge hole in a very low pressure area and the fuel in the float bowl vented to atmosphere, fuel flows through the idle system as follows:

Atmospheric pressure forces fuel from the float bowl down through the main metering jet into the main fuel well where it is picked up and metered at the lower tip of the idle tube. It passes up the idle tube and is mixed with

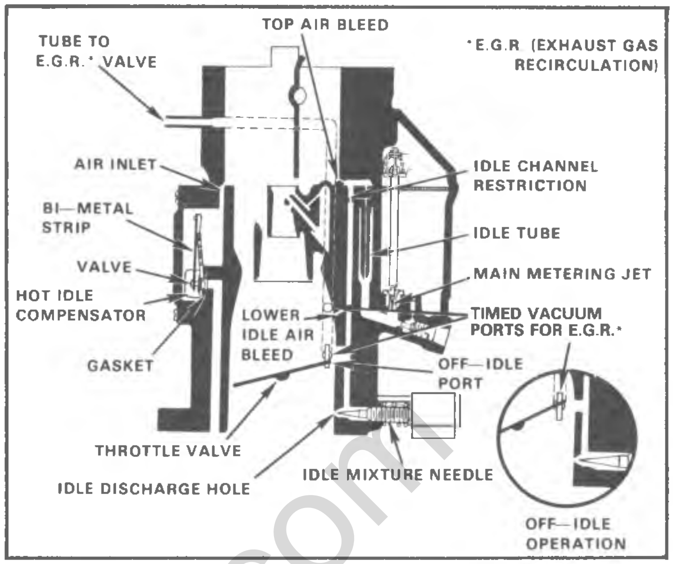


Fig. 3—Idle System

air at the top of the idle channel through the idle air bleed hole. The air/fuel mixture passes over through the cross channel and then downward through the calibrated idle channel restriction where it is further metered. The mixture continues down the idle passage past the lower idle air bleed hole and off-idle discharge port just above the throttle valve, where it is again mixed with air. The air/fuel mixture then moves downward past the idle mixture needle and out through the idle discharge hole into the carburetor bore. Here it mixes with the air passing around the slightly open throttle valve and then continues through the intake manifold into the engine cylinders as a combustible mixture.

OFF-IDLE OPERATION

As the throttle valve is opened from curb idle to increase engine speed, additional fuel is needed to combine with the extra air entering the engine. This is accomplished by the slotted off-idle port. As the throttle valve is opened, it passes the off-idle port, gradually exposing it to high vacuum below the throttle valve. The additional fuel from the off-idle port mixes with the increased air flow past the opening throttle valve to meet increased engine air and fuel demands.

Further opening of the throttle valve causes increased air flow through the carburetor bore, which causes sufficient pressure drop in the multiple venturi to start fuel delivery from the main discharge nozzle. The off-idle port fuel discharge does not cease at this transfer point but rather diminishes as fuel flow from the main discharge nozzle increases. In this way, the systems are so designed that they combine to produce a smooth fuel flow at all engine speeds.

The lower idle air bleed is used strictly as an air bleed during idle operation. It supplies additional air to the idle circuit for improved atomization and fuel control at low engine speeds.

The same air bleed is used as an additional fuel feed at higher engine speeds to supplement main discharge nozzle delivery during operation of the main metering system.

The timed spark port has one tube which supplies vacuum during the off-idle and part throttle operation of the carburetor. The tube leads to the purge valve on the vapor canister to provide a means of pulling fuel vapors from the canister during periods of higher air flow through the carburetor bore. A limited amount of canister purge is also provided by a separate tube which leads from the canister to the PCV valve hose connection.

An exhaust gas recirculation (E.C.R.) system is used on all models to control oxides of nitrogen emissions. The E.G.R. valve is operated by a vacuum signal taken from the carburetor throttle body.

A vacuum supply tube installed in the carburetor air horn connects by a passage through the float bowl to the timed vertical port in the throttle body bore. This provides a vacuum signal to the E.G.R. valve in the off-idle and part throttle operation of the carburetor. The purpose of the E.G.R. system is to supply a metered amount of exhaust gases to the combustion mixtures and lower combustion temperatures, thereby reducing oxides of nitrogen during these ranges of engine operation.

Hot Idle Compensator

The hot idle compensator (Figure 3), with automatic transmission only, is located in a chamber on the float bowl casting, adjacent to the carburetor bore, on the throttle lever side of the carburetor. Its purpose is to offset enrichening effects caused by changes in air density and fuel vapors generated during hot engine operation.

The compensator consists of a thermostatically controlled valve, a bi-metal strip which is heat sensitive, a valve holder and bracket. The valve closes off an air channel which leads from a hole inside the air horn to a point below the throttle valve where it exists into the throttle body bore.

Normally, the compensator valve is held closed by tension of the bi-metal strip and engine vacuum. During extreme hot engine operation, excessive fuel vapors in the carburetor can enter the engine manifold causing richer than normally required mixtures. This can result in rough engine idle and stalling. At a pre-determined temperature, when extra air is needed to offset the enrichening effects of fuel vapors, the bi-metal strip bends and unseats the compensator valve, uncovering the air channel leading from the compensator valve chamber to the throttle body bore. This allows enough air to be drawn into the engine manifold to offset the richer mixtures and maintain a smooth engine idle. When the engine cools and the extra air is not needed, the bi-metal strip closes the valve and operation returns to normal.

The compensator valve assembly is held in place by the dust cover over the valve chamber. A seal is used between the compensator valve and float bowl casting.

In order to insure proper idle adjustment when the engine is hot, the compensator valve must be closed. To check this, plug the compensator inlet hole inside the air horn bore (pencil can be used). If no drop in engine rpm is noted on a tachometer, the valve is closed; if the valve is open, leave plug in hole when adjusting idle or cool engine down to a point where the valve automatically closes for proper idle adjustment.

CAUTION: *Always remove plug used in inlet hole after completing idle adjustment, otherwise, the compensator will not operate.*

MAIN METERING SYSTEM (Fig. 4)

The main metering system supplies fuel to the engine from off-idle to wide open throttle operation. It feeds at all times when air flow through the venturi is great enough to maintain efficient fuel flow from the main discharge nozzle. The triple venturi stack-up used in the Monojet carburetor is very sensitive to air flow, which results in a finer and more stable metering control from light to heavy engine loads.

The main metering system consists of a main metering jet, mechanical and vacuum operated metering rod, main fuel well, main well air bleeds, fuel discharge nozzle and triple venturi.

The main metering system operates in the following manner:

As the throttle valve is opened beyond the off-idle range, allowing more air to enter the engine manifold, air velocity increases in the carburetor venturi. This causes a drop in pressure in the main venturi which is increased many times in the double boost venturi. Since the lower pressure (vacuum) is now in the smallest venturi, fuel flows from the main discharge nozzles in the following manner:

Fuel in the float bowl passes between the tapered metering rod and the main metering jet where it is

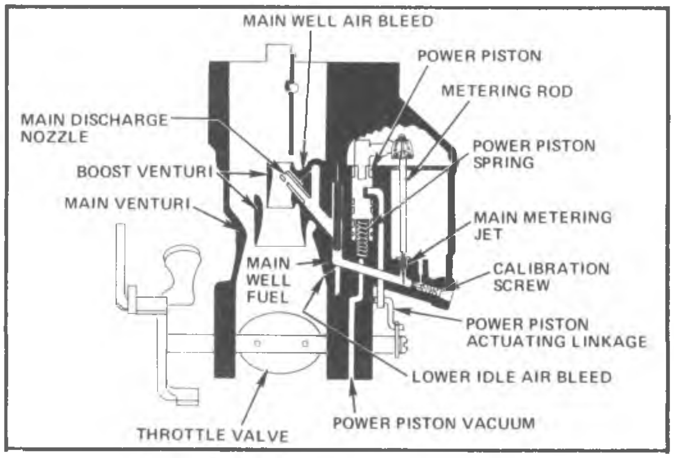


Fig. 4—Main Metering System

metered and flows on into the main fuel well. In the main well the fuel is mixed with air from the air bleed at the top of the well and another air bleed which leads into the main well from the discharge nozzle cavity. After the fuel in the main well is mixed with air from the air bleeds it then passes up the discharge nozzle where it sprays into the small boost venturi. At the boost venturi, the fuel mixture then combines with air entering the engine through the carburetor bore to provide the correct air/fuel mixtures to the engine for efficient combustion.

Fuel flow to the main discharge nozzle is controlled by a tapered metering rod which is actuated by linkage connected directly to the throttle shaft. As the throttle valve is opened from idle position, the tapered metering rod is gradually raised out of the main metering jet orifice. Fuel flow from the main discharge nozzle is controlled by throttle opening and the depth of the metering rod in the main metering jet orifice. With the fuel metering mechanically controlled by the throttle valve angle, it is possible to maintain very accurate mixture ratios throughout part throttle to wide open throttle operation. An initial metering rod adjustment is required to set the depth of the rod in the main metering jet.

CAUTION: *It should be noted here that there is a supplementary fuel feed passage in the bottom of the float bowl adjacent to the main metering jet. Fuel is picked up from the float bowl and passes through a calibrated hole, past a calibration screw and on into the same fuel passage which leads from the main metering jet to the main fuel well. The purpose of the adjustable fuel feed is to allow the factory to refine part throttle calibration to meet very accurate air/fuel mixture ratios. This adjustment is made using very sensitive instrumentation and the screw should not be tampered with or it will require complete float bowl or unit replacement.*

POWER ENRICHMENT SYSTEM (Fig. 5)

The vacuum operated power enrichment system is used to slightly enrichen mixture ratios during moderate to heavy loads during acceleration. The necessary enrichment is obtained by movement of a spring loaded vacuum piston which senses changes in manifold vacuum. The amount of enrichment is controlled by the clearance between the groove in the power piston and the diameter of the power piston drive rod.

During part throttle and cruising ranges, manifold vacuum is sufficient to hold the power piston down against spring tension. The upper part of the groove in the power piston is held down against the top side of the drive rod. This places the main metering rod lower in the jet for maximum economy. On moderate to heavy accelerations, manifold vacuum drops and the power piston spring pushes the power piston up so that the ower edge of the slot in the power piston strikes the

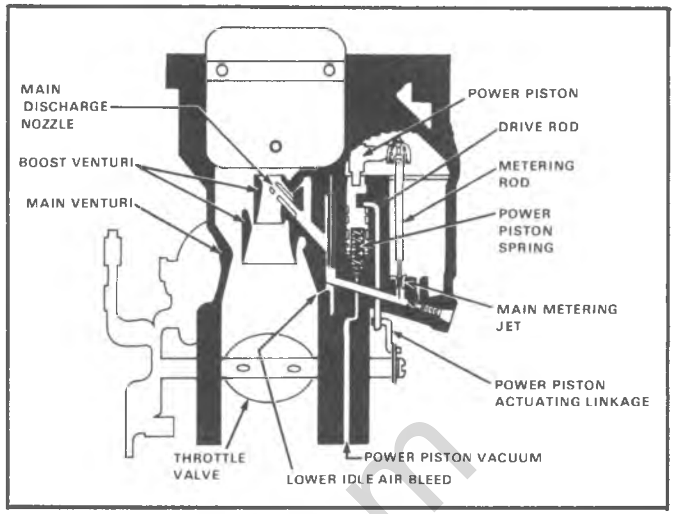


Fig. 5—Power Enrichment System

bottom side of the drive rod. This moves the tapered metering rod slightly upward and out of the main metering jet, allowing more fuel to flow through the jet, enrichening the fuel mixture slightly.

ACCELERATING PUMP SYSTEM (Fig. 6)

Extra fuel for smooth, quick acceleration is supplied by a double spring loaded pump plunger. Rapid opening of the throttle valve, when accelerating from low speed, causes an immediate increase in air flow through the carburetor bore. Since fuel is heavier than air, it requires a short period of time for fuel flow through the main discharge nozzle to catch up with the air flow. To avoid leanness during this momentary lag in the fuel flow, the accelerator pump furnishes a metered quantity of fuel which is sprayed into the air stream. This mixes with the increased air flow to supply the extra fuel needed until the main discharge nozzles can feed the fuel required.

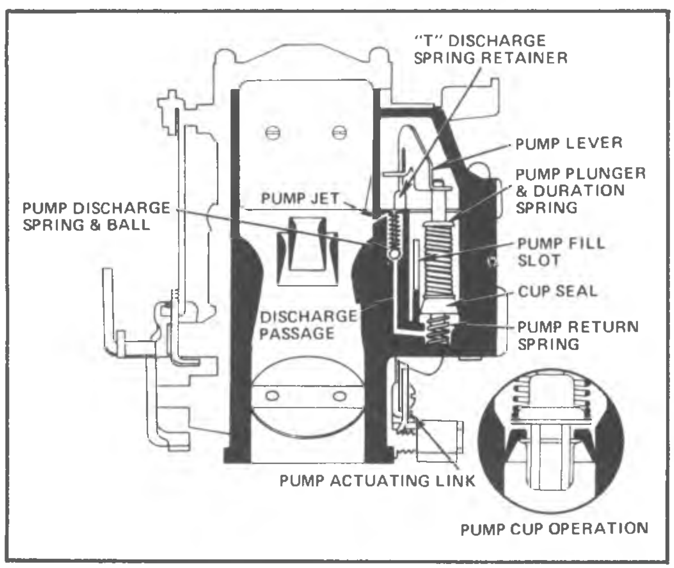


Fig. 6—Accelerating Pump System

The accelerating pump is located at the side of the main fuel bowl, adjacent to the venturi area. It consists of a spring loaded pump plunger and pump return spring operating in a fuel well. The pump plunger is connected by linkage directly to a lever on the throttle shaft.

When the pump plunger moves upward in the pump well, as happens during throttle closing, fuel from the float bowl enters the pump well through a slot in the side of the pump well and flows past the synthetic pump cup seal into the bottom of the pump well. The pump cup is a floating type (the cup moves up and down on the pump plunger head). When the pump plunger is moved upward, the flat on the top of the cup unseats from the flat on the plunger head and allows free movement of fuel through the inside of the cup into the bottom of the pump well. This also vents any vapors which may be in the bottom of the pump well so that a solid charge of fuel can be maintained in the fuel well beneath the plunger head.

When the throttle valve is opened, as happens during acceleration, the connecting pump linkage forces the pump plunger downward. The pump cup seats instantly and fuel is forced through the pump discharge passage, where it unseats the pump discharge check ball and passes on through the passage to the pump jet located at the top of the float bowl, where it sprays into the boost venturi area.

The pump plunger is spring loaded; the upper duration spring is balanced with the bottom pump return spring so that a smooth sustained charge of fuel is delivered during acceleration.

The pump discharge check ball prevents any pull over or discharge of fuel from the pump jet when the accelerator pump is not in operation. It also keeps the pump discharge passage filled with fuel to prevent pump discharge lag.

The pump does not require adjustment in service as it is preset during manufacture.

CHOKE SYSTEM (Fig. 7)

The purpose of the choke system is to provide a richer mixture for cold engine starting and operation. Richer than normal mixtures are required because vaporized fuel has a tendency to condense on cold engine parts. This occurs on the inside area of the intake manifold and cylinder heads, thereby, decreasing the amount of combustible mixture available in the engine cylinders.

The model MV carburetor is equipped with a fully automatic choke control. The thermostatic coil is mounted on the head and is connected by a link to the lever on the choke valve shaft. The vacuum break units are diaphragm operated and externally mounted on the air horn casting.

The choke system operates as follows: when the engine is cold, prior to starting, depressing the accelerator pedal to the floor opens the carburetor throttle valve. This allows tension from the thermostatic coil to close the choke

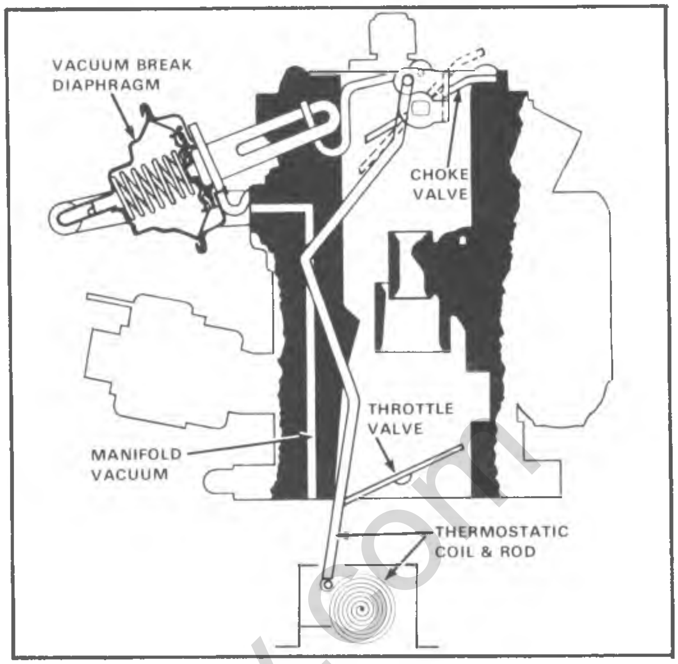


Fig. 7—Choke System

valve and also rotates the fast idle cam so the high step is in line with the fast idle cam follower on the throttle lever. As the throttle is released, the fast idle cam follower comes to rest on the high step of the fast idle cam, thus providing enough throttle valve opening to keep the engine running after cold start. During cranking, engine vacuum below the choke valve pulls fuel from the idle circuit and main discharge nozzle. This provides adequate enrichment for good cold starts.

When the engine starts, manifold vacuum is transmitted through a vacuum channel to the primary vacuum break diaphragm unit mounted on the air horn casting. This moves the diaphragm plunger until it strikes the cover which, in turn, opens the choke valve to a point where the engine will run without loading or stalling. This is called the vacuum break position.

The auxiliary vacuum break unit (Fig. 8) is used to open the choke valve to a nearly wide open position during warmer temperatures above 80°F. This prevents too rich a mixture when starting a cold engine during warm temperatures due to choke coil cooling, causing the choke valve to be too far closed.

The auxiliary diaphragm unit is controlled by a vacuum switch which is operated by engine coolant temperature. When the engine is started at temperatures above 80°F., the vacuum switch opens and allows manifold vacuum to be applied to the auxiliary vacuum break diaphragm. The diaphragm unit pulls the choke valve to a nearly open position overcoming choke coil tension. At the same time the fast idle cam drops so that the fast idle cam follower tang rests on the lowest step of the fast idle cam. This maintains some fast idle until the engine warms up. When the engine is warmed up the choke coil pulls the choke valve fully open and the fast idle cam rotates so the fast idle cam follower tang drops off the

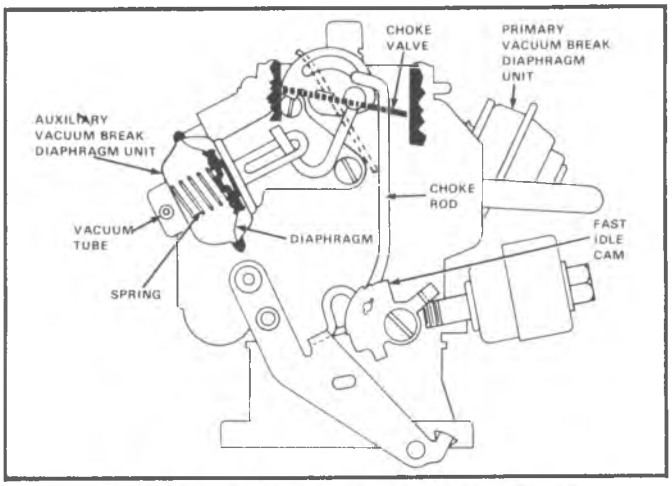


Fig. 8—Choke System (Auxiliary Vacuum Break)

low step, at which point the engine will run at curb idle speed.

As the engine warms up, the thermostatic coil is heated and gradually relaxes its spring tension so that air velocity through the air horn can continue to open the choke valve. This continues until the engine is warm. At this point the choke coil tension is completely relaxed and the choke valve is wide open.

The fast idle cam has graduated steps so that fast idle engine speed is lowered gradually during the engine warm up period. The fast idle cam follows rotation of the choke valve. When the choke valve is completely open and the engine is warm, the fast idle tang on the throttle lever will be off the steps of the fast idle cam. At this point, the idle screw or idle stop solenoid controls normal engine idle speed.

An unloader mechanism is provided should the engine become flooded during the starting period. The unloader partially opens the closed choke valve to allow increased air flow through the carburetor to lean out the overly rich mixtures. This is accomplished by depressing the accelerator pedal to the floor so that wide open throttle is obtained. When this is done, a tag on the throttle lever contacts an arm on the fast idle cam and forces the choke valve partially open. The extra air leans out the fuel mixture enough so that the engine will start.

MAINTENANCE AND ADJUSTMENT

INDEX

IDLE SPEED

Two idle speeds are required and are controlled and adjustable by the idle stop solenoid. The purpose of two idle speeds is to prevent dieseling when ignition is turned off.

One speed is Curb Idle Speed which is normal engine idle and solenoid is energized. The second speed is Low Idle Speed and when solenoid is de-energized the carburetor throttle plate closes further than at normal engine idle.

Low Idle and Curb Idle Speed Adjustment (Fig. 9)

Refer to Vehicle Emission Control Information label on vehicle for latest certified specification information which may differ from specifications in manual.

1. With engine at normal operating temperature, air cleaner on, choke open, and air conditioning OFF, connect a tachometer to engine.
2. Set parking brake and block drive wheels.
3. Disconnect fuel tank hose from vapor canister.
4. Disconnect vacuum advance hose at distributor and plug hose.
5. Start engine, check timing and adjust as required. Reconnect vacuum advance hose.
6. Turn solenoid in or out to set curb idle speed to specified rpm on automatic transmission or manual transmission.
7. Disconnect electrical connector at idle stop solenoid.
8. With automatic transmission in Drive or manual transmission in Neutral, turn 1/8" hex screw located in end of solenoid body to set low idle speed to specified rpm.
9. Reconnect electrical connector to solenoid and crack throttle slightly.
10. Shut off engine and remove tachometer.
11. If vehicle is equipped with air-conditioning, reset idle speed to specification with air-conditioning ON. (All except 250 manual transmission equipped with light duty emission control system.)
12. Connect fuel tank hose to vapor canister.

IDLE MIXTURE

The idle mixture is factory preset and idle mixture screw is capped with a plastic limiter cap. The cap permits

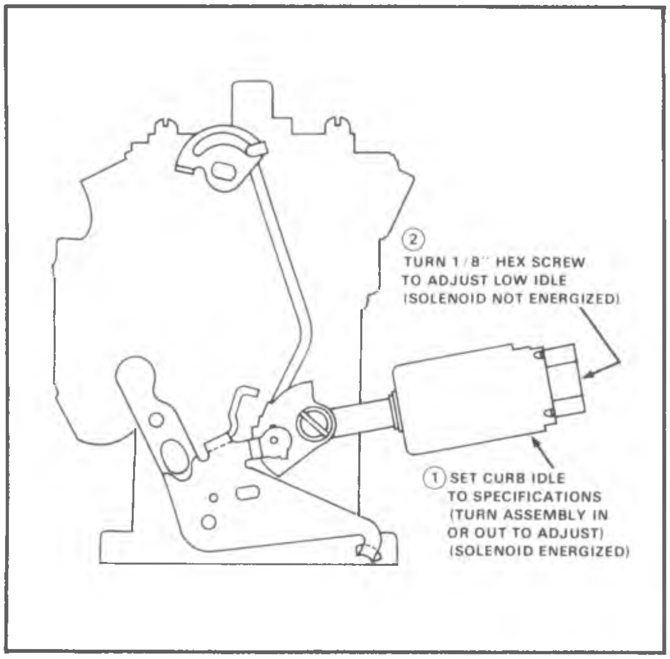


Fig. 9—Low and Curb Idle Speed Adjustment

screw to be turned about one turn leaner (clockwise) without breaking cap. The idle mixture is set to achieve the smoothest idle while maintaining emission levels within standards prescribed by Federal Law.

At major carburetor overhaul the idle mixture may be adjusted. Before suspecting idle mixture as cause of poor idle quality, check ignition system, distributor, timing, air cleaner, PCV system, evaporation emission control and compression pressures. Also check all vacuum hoses and connections for leaks and check torques of carburetor attachment bolts. Adjustment is made using a tachometer.

Refer to Vehicle Emission Control Information label on vehicle for latest certified specification information which may differ from specifications in manual.

IDLE MIXTURE ADJUSTMENT

1. With engine at normal operating temperature, air cleaner on, choke open, and air conditioning OFF, connect a tachometer to engine.
2. Set parking brake and block drive wheels.
3. Disconnect fuel tank hose from vapor canister.
4. Disconnect vacuum advance hose at distributor and plug hose.
5. Start engine, check timing and adjust as required. Reconnect vacuum advance hose.
6. On automatic transmission, place selector in Drive. On manual transmission, place selector in Neutral and disconnect electrical connector at idle stop solenoid.
7. Set idle speed to higher specified rpm by turning solenoid in or out on automatic transmission or turning 1/8" hex screw in end of solenoid on manual transmission.
8. Cut off tab on limiter cap. Do not remove cap from screw. Turn idle mixture screw counterclockwise until maximum idle speed is achieved. Reset idle speed to specified rpm, if required.
9. Observe tachometer and turn idle mixture screw clockwise until idle speed is at specified rpm.
10. Shut off engine and remove tachometer.
11. Connect fuel tank hose to vapor canister and on manual transmission vehicle, connect electrical connector to idle stop solenoid.

FAST IDLE ADJUSTMENT (Fig. 10)

1. Check low and curb idle speed and adjust as required.
2. With engine at normal operating temperature, air cleaner on, choke open, EGR valve signal line disconnected and plugged and air conditioning OFF, connect tachometer to engine.
3. Disconnect vacuum advance hose at distributor and plug hose.
4. Start engine and with transmission in Neutral, set fast idle cam follower so that tang is on high step of cam.
5. Bend tang in or out to obtain fast idle RPM.

FAST IDLE CAM ADJUSTMENT (Fig. 11)

1. Check fast idle speed and adjust as required.
2. Set fast idle cam follower firmly on second stop of cam.
3. Rotate and hold choke valve toward closed position by applying force to choke coil rod.
4. Insert specified gauge between lower edge of choke valve and inside air horn wall.
5. Bend cam-to-choke rod as required to obtain clearance.

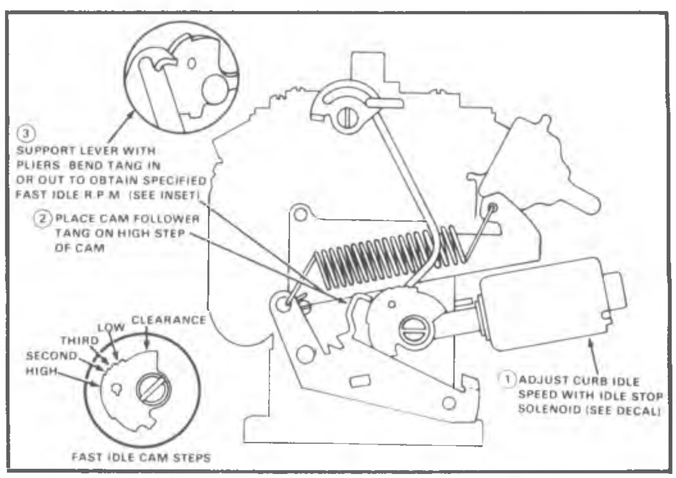


Fig. 10—Fast Idle Adjustment - 1MV

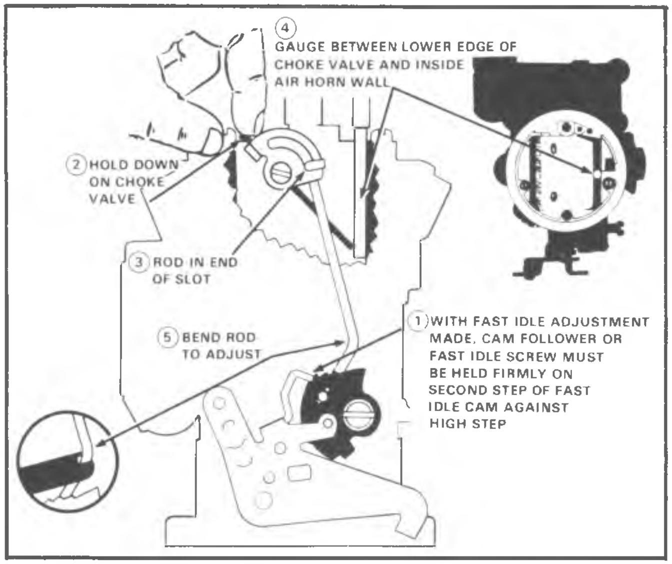


Fig. 11—Fast Idle Cam Adjustment

CHOKE UNLOADER ADJUSTMENT (Fig. 12)

1. Hold down on choke valve by applying a light force to choke coil lever.
2. Rotate throttle valve to wide open position.
3. Insert specified gauge between upper edge of choke valve and air horn wall.
4. If adjustment is required, bend tang on throttle lever.

CHOKE COIL ROD ADJUSTMENT (Fig. 13)

1. Pull up on rod to end of travel to completely close choke valve.
2. Bottom of rod should be even with top of lever.
3. If adjustment is required, bend rod.

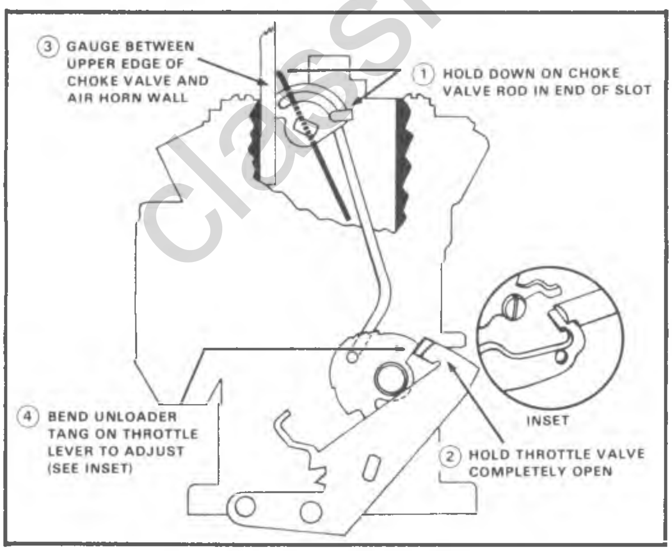


Fig. 12—Choke Unloader Adjustment - 1MV

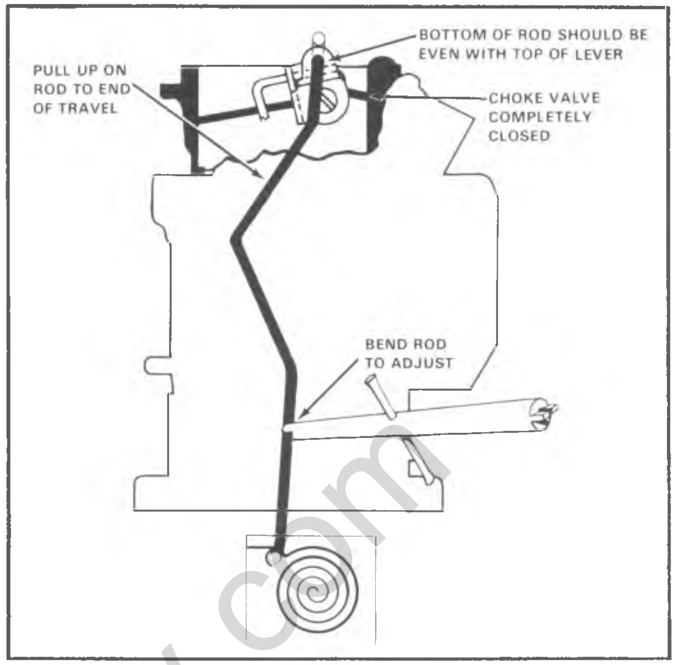


Fig. 13—Choke Coil Rod Adjustment - 1MV

PRIMARY VACUUM BREAK ADJUSTMENT (Fig. 14)

1. Using an outside vacuum source, apply vacuum to primary vacuum break diaphragm until plunger is fully seated.
2. Insert specified gauge between lower edge of choke valve and air horn wall.
3. If adjustment is required, bend vacuum break rod.
4. After adjustment, make sure there is no interference or binding.

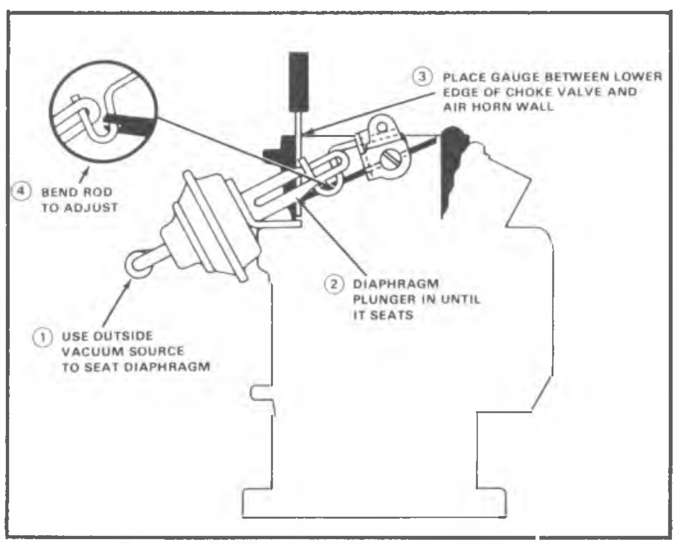


Fig. 14—Primary Vacuum Break Adjustment

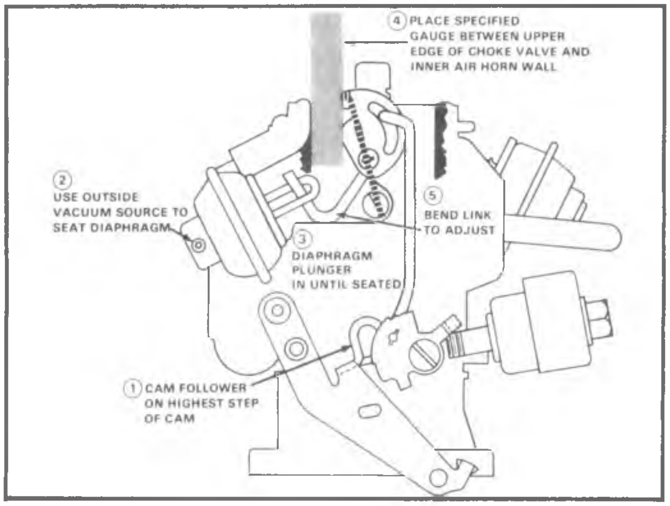


Fig. 15—Auxiliary Vacuum Break Adjustment

AUXILIARY VACUUM BREAK ADJUSTMENT (Fig. 15)

1. Using an outside vacuum source, apply vacuum to auxiliary vacuum break diaphragm until plunger is fully seated.
2. Position cam follower on highest step of fast idle cam.
3. With vacuum break diaphragm in fully seated position, insert specified gauge between upper edge of choke valve and inner air horn wall.
4. If adjustment is required, bend link between vacuum break and choke valve.

SERVICE OPERATIONS

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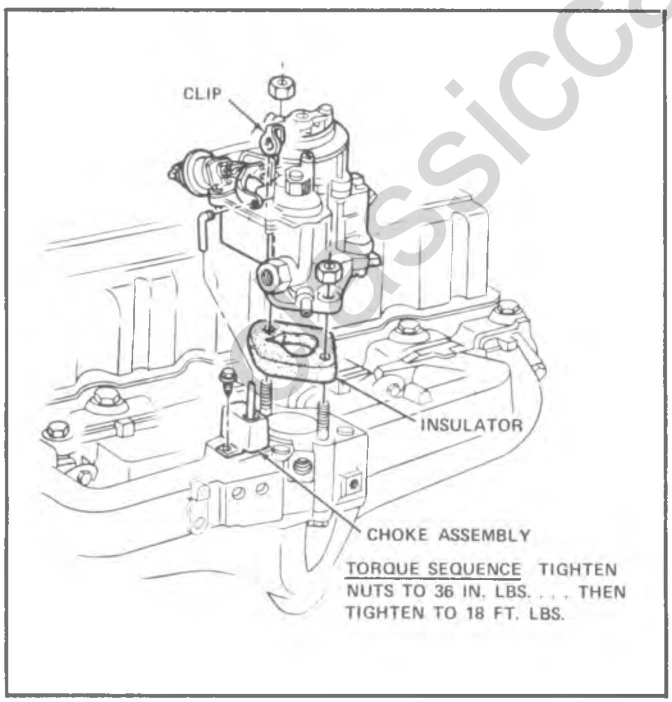

Fig. 16—Carburetor, Choke and Heat Stove

CARBURETOR REPLACEMENT (Fig. 16)

Removal

Flooding, stumble on acceleration and other performance complaints are, in many instances, caused by presence of dirt, water, or other foreign matter in carburetor. To aid in diagnosing cause, carburetor should be carefully removed from engine without draining fuel from bowl. Contents of fuel bowl may then be examined for contamination as carburetor is disassembled. Check filter.

1. Remove air cleaner and gasket.
2. Disconnect fuel and vacuum lines from carburetor.
3. Disconnect choke coil rod.
4. Disconnect accelerator linkage.
5. Disconnect idle stop solenoid electrical connector.
6. If equipped with automatic transmission, disconnect TV linkage.
7. Remove carburetor attaching nuts and remove carburetor and solenoid assembly attachment.
8. Remove insulator gasket, air cleaner bracket and flange gasket.

Installation

It is good shop practice to fill carburetor bowl before installing carburetor. This reduces strain on starting

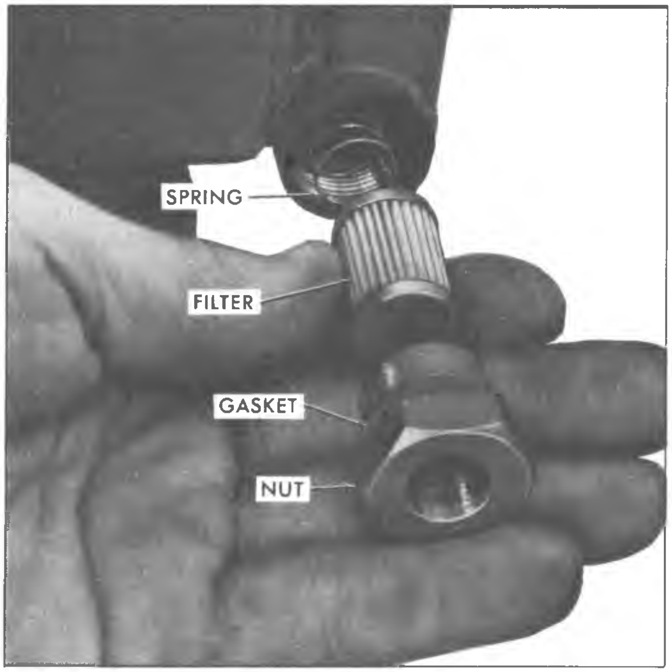

Fig. 17—Fuel Filter · Monojet

motor and battery and reduces the possibility of backfiring while attempting to start engine. A small supply of fuel will enable carburetor to be filled and the operation of float and intake needle and seat to be checked. Operate throttle lever several times and check discharge from pump jets before installing carburetor.

1. Be certain throttle body and intake manifold sealing surfaces are clean.
2. Install carburetor insulator.
3. Install carburetor over manifold studs.
4. Install vacuum and fuel lines at carburetor.
5. Install attaching nuts and tighten securely.
6. Tighten fuel and vacuum lines.
7. Connect accelerator linkage.
8. Connect choke coil rod and idle stop solenoid electrical connector.
9. Guide vent tube into rocker cover and install air cleaner.
10. Refer to Maintenance and Adjustment and adjust low and curb idle speeds.

FUEL FILTER REPLACEMENT (Fig. 17)

A plugged fuel filter will restrict fuel flow or by-pass foreign material into carburetor and will result in a loss of engine power or rough (pulsating) engine feel, especially at high engine speeds.

1. Disconnect fuel line connection at inlet fuel filter nut.
2. Remove inlet fuel filter nut from carburetor.
3. Remove filter element and spring.
4. Install element spring and filter element in carburetor.
5. Install new gasket on inlet fitting nut and install nut in carburetor and tighten securely.
6. Install fuel line and tighten connector.

IDLE STOP SOLENOID REPLACEMENT

The idle stop solenoid should be checked to assure that it permits the throttle plate to close further when the ignition switch is turned "off". An inoperative solenoid should be replaced.

Removal

1. Remove carburetor air cleaner.
2. Disconnect electrical connector at solenoid.
3. Counting number of turns, unscrew and remove idle stop solenoid from float bowl assembly.

Installation

1. Hold choke valve wide open so that fast idle cam follower clears fast idle cam.
2. Install idle stop solenoid and turn in until it contacts lever tang.
3. Connect electrical connector.
4. Install air cleaner.
5. Refer to Maintenance and Adjustment and adjust low and curb idle speeds.

CHOKE COIL REPLACEMENT

Choke mechanism should be checked for free operation. A binding condition may have developed from petroleum gum formation on the choke shaft or from damage. Choke shafts can usually be cleaned without disassembly by using Carbon X(X55) or equivalent.

1. Remove air cleaner and disconnect choke rod upper lever.
2. Remove bolt attaching choke coil to head, and remove choke coil and choke rod as an assembly.
3. Disconnect choke rod from choke coil.
4. Connect choke rod to new choke coil and install assembly on manifold.
5. Install bolt and tighten securely.
6. Adjust and connect choke rod as outlined.
7. Start and warm-up engine, then check operation of choke and install air cleaner.

AIR HORN TIGHTENING SEQUENCE

Refer to Figure 18 for proper air horn tightening sequence.

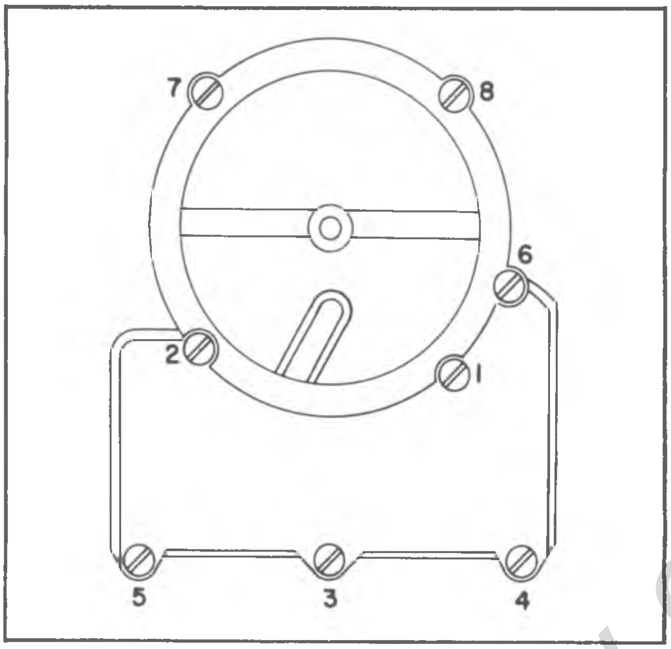

Fig. 18—Air Horn Tightening Sequence

DIAGNOSIS

GENERAL

When carburetor troubles are encountered they can usually be diagnosed and corrected with an adjustment as outlined below and under Maintenance and Adjustments.

Before diagnosing the carburetor as the trouble area, check and diagnose the following:

1. Fuel Supply
2. Fuel pump pressure and volume.
3. Plugged fuel filter or fuel lines.
4. Linkage and emission control systems.
5. Engine compression.
6. Ignition system firing voltage.
7. Ignition spark timing.
8. Spark plugs
9. Secure intake manifold.
10. Engine temperature.

Use the following tables to diagnose carburetor.

Problem: ENGINE IDLES ROUGH AND STALLS

Idle speed setting.	Re-set low and curb idle speeds under maintenance and adjustments.
Manifold vacuum hoses disconnected or improperly installed.	Check all vacuum hoses leading into the manifold or carburetor base for leaks or being disconnected. Install or replace as necessary.
Carburetor loose on intake manifold.	Torque carburetor to manifold bolts (10-14 ft. lbs.).
Intake manifold is loose or gaskets are defective.	Using a pressure oil can, spray light oil or kerosene around manifold legs and carburetor base. If engine RPM changes, tighten or replace the manifold gaskets or carburetor base gaskets as necessary.
Hot idle compensator not operating (where used.)	Normally the hot idle compensator should be closed when engine is running cold and open when engine is hot (approx. 140°F at comp.) replace if defective.
Carburetor flooding. NOTE: Also check carburetor flooding when engine cranks (turn over) but will not start or starts hard when cold.	1. Remove air horn and check float adjustment, as specified in carburetor overhaul section. 2. Check float needle and seat for proper seal. If a needle and seat tester is not available, mouth suction can be applied to the needle seat with needle installed. If the needle is defective, replace with a factory matched set. 3. Check float for being loaded with fuel, bent float hanger or binds in the float arm. NOTE: A solid float can be checked for fuel absorption by lightly squeezing between fingers. If wetness appears on surface or float feels heavy (check with known good float), replace the float assembly. 4. If excessive dirt is found in the carburetor, clean the fuel system and carburetor. Replace fuel filter as necessary.

Problem:

ENGINE CRANKS (TURNS OVER) BUT WILL NOT START OR STARTS HARD WHEN COLD.

POSSIBLE CAUSE	CORRECTIVE ACTION
Improper starting procedure used.	Check proper starting, as outlined in the owner's manual.
No fuel in gas tank	Add fuel. Check fuel gauge for proper operation.
Choke valve not closing sufficiently when cold.	Adjust the choke coil rod.
Choke valve or linkage binding or sticking.	Realign the choke valve or linkage as necessary. If caused by dirt and gum, clean with automatic choke cleaner. Do not oil choke linkage. If parts are replaced, check adjustments.
No fuel in carburetor.	1. Remove fuel line at carburetor. Connect hose to fuel line and run into metal container. Remove the high tension coil wire from center tower on distributor cap and ground. Crank over engine — if there is no fuel discharge from the fuel line, check for kinked or bent lines. Disconnect fuel line at tank and blow out with air hose, reconnect line and check again for fuel discharge. If none, replace fuel pump. Check pump for adequate flow, as outlined in service manual. 2. If fuel supply is o.k., check the following: a. Inspect fuel filter. If plugged replace. b. If filter is o.k., remove air horn and check for a bind in the float mechanism or a sticking float needle. If o.k., adjust float as specified in carburetor overhaul section.
Engine Flooded. NOTE: To check for flooding, remove the air cleaner, with the engine off, and look into the carburetor bore. Fuel will be dripping off nozzle and/or the carburetor will be very wet.	Check proper carburetor unloading procedure. Depress the accelerator to the floor and check the carburetor to determine if the choke valve is opening. If not, adjust the throttle linkage and unloader, as specified.
Carburetor flooding	NOTE: Before removing the carburetor air horn, use the following procedure which may eliminate the flooding. 1. Remove the fuel line at the carburetor and plug. Crank and run the engine until the fuel bowl runs dry. Turn off the engine and connect fuel line. Then re-start and run engine. This will usually flush dirt past the carburetor float needle and seat. 2. If dirt is in fuel system, clean the system and replace fuel filter as necessary. If excessive dirt is found, remove the carburetor unit. Disassemble and clean. 3. Check float needle and seat for proper seal. If a needle and seat tester is not available, apply mouth suction to the needle seat with needle installed. If the needle is defective, replace with a factory matched set. 4. Check float for being loaded with fuel, bent float hanger or binds in the float arm. NOTE: Check float for fuel absorption by lightly squeezing between fingers. If wetness appears on surface or float feels heavy (Check with known good float), replace the float assembly. 5. Adjust float as specified in carburetor overhaul section.

Problem: ENGINE STARTS AND STALLS

Engine does not have enough fast idle speed when cold.	Check and re-set the fast idle setting and fast idle cam.
Choke vacuum break unit is not adjusted to specification or unit is defective.	1. Adjust vacuum break to specification. 2. If adjusted O.K., check the vacuum break for proper operation as follows: On the externally mounted vacuum break unit, connect a piece of hose to the nipple on the vacuum break unit and apply suction by mouth or use tool J-23418 to apply vacuum. Plunger should move inward and hold vacuum. If not, replace the unit. NOTE: Always check the fast idle cam adjustment before adjusting vacuum break unit.
Choke coil rod out of adjustment.	Adjust choke coil rod.
Choke valve and/or linkage sticking or binding.	1. Clean and align choke valve and linkage. Replace if necessary. 2. Re-adjust if part replacement is necessary.
Idle speed setting	Adjust low and curb idle speeds to specifications on label in engine compartment.
Not enough fuel in carburetor.	1. Check fuel pump pressure and volume. 2. Check for partially plugged fuel inlet filter. Replace if dirty. 3. Remove air horn and check float adjustments as specified in carburetor overhaul section.
Carburetor flooding. NOTE: Also check carburetor flooding when engine cranks (turn over) but will not start or starts hard when cold.	1. Check float needle and seat for proper seal. If a needle and seat tester is not available, mouth suction can be applied to the needle seat with needle installed. If needle is defective, replace with a factory matched set. 2. Check float for being loaded with fuel, bent float hanger or binds in the float arm. NOTE: Check float for fuel absorption by lightly squeezing between fingers. If wetness appears on surface or float feels heavy (check with known good float), replace the float assembly. 3. Check float adjustments as specified in carburetor overhaul section. 4. If excessive dirt is found in the carburetor, clean the fuel system and carburetor. Replace fuel filter as necessary.

Problem: ENGINE RUNS UNEVEN OR SURGES

POSSIBLE CAUSE	CORRECTIVE ACTION
Fuel Restriction	Check all hoses and fuel lines for bends, kinks or leaks. Straighten and secure in position. Check all fuel filters. If plugged or dirty - replace.
Dirt or water in fuel system.	Clean fuel tank and lines. Remove and clean carburetor.
Fuel level	Adjust float as specified in carburetor overhaul section. Check for free float and float needle valve operation.
Main metering jet defective, loose or incorrect part.	Replace as necessary.
Power system in carburetor not functioning properly. Power valve sticking in down position.	Free up or replace as necessary.
Vacuum leakage	It is absolutely necessary that all vacuum hoses and gaskets are properly installed, with no air leaks. The carburetor and manifold should be evenly tightened to specified torque.

Problem: POOR FUEL ECONOMY

Engine needs complete tune-up.	Check engine compression. Examine spark plugs, (if dirty or improperly gapped, clean and re-gap or replace). Check ignition point dwell, condition, readjust ignition points if necessary and check and reset ignition timing. Clean or replace air cleaner element if dirty. Check for restricted exhaust system and intake manifold for leakage, make sure all vacuum hoses are connected correctly.
Choke valve not fully opening.	1. Clean choke and free up linkage. 2. Check choke coil rod for proper adjustment. Reset to specifications.
Fuel leaks.	Check fuel tank, fuel lines and fuel pump for any fuel leakage.
Power system in carburetor not functioning properly. Power valve sticking in up position.	Free up or replace as necessary.
High fuel level in carburetor or carburetor flooding.	1. Check for dirt in the needle and seat. Test using suction by mouth or needle seat tester. If defective, replace needle and seat assembly with factory matched set. 2. Check for loaded float. 3. Re-set carburetor float as specified in carburetor overhaul section. 4. If excessive dirt is present in the carburetor bowl, the carburetor should be cleaned.
Fuel being pulled from accelerator system into venturi through pump jet.	Run engine at RPM where nozzle is feeding fuel. Observe pump jet. If fuel is feeding from jet, check pump discharge ball for proper seating by filling cavity above ball with fuel to level of casting. No "leak down" should occur with discharge ball in place. Re-stake or replace leaking check ball, defective spring, or retainer.
Air bleeds or fuel passages in carburetor dirty or plugged.	Clean carburetor or overhaul as necessary.

Problem: ENGINE HESITATES ON ACCELERATION

Defective accelerator pump system NOTE: A quick check of the pump system can be made as follows. With the engine off, remove air cleaner and look into the carburetor bores and observe pump stream, while briskly opening throttle valve. A full stream of fuel should emit from pump jet and strike near the center of the venturi area.	1. Remove air horn and check pump cup. If cracked, scored or distorted, replace the pump plunger. 2. Check the pump discharge ball for proper seating and location. The pump discharge ball is located in a cavity next to the pump well. To check for proper seating, remove air horn and gasket and fill cavity with fuel. No "leak down" should occur. Restake and replace check ball if leaking. Make sure discharge ball, spring, and retainer are properly installed.
Dirt in pump passages or pump jet.	Clean and Blow out with compressed air.
Fuel level.	Check for sticking float needle or binding float. Free up or replace parts as necessary. Check and reset float level as specified in carburetor overhaul section.
Leaking air horn to float bowl gasket.	Torque air horn to float bowl using proper tightening procedure.
Carburetor loose on manifold.	Torque carburetor to manifold bolts. (10-14 ft. lbs.).

Problem: NO POWER ON HEAVY ACCELERATION OR AT HIGH SPEED

Carburetor throttle valve not going wide open. (Check by pushing accelerator pedal to floor).	Adjust throttle linkage to obtain wide open throttle in carburetor.
Dirty or plugged fuel filter.	Replace with a new filter element.
Power system not operating.	Check power valve for free up and down movement.
Float level too low.	1. Check and reset float level as specified in carburetor overhaul section.
Float not dropping far enough into float bowl.	Check for binding float hanger and for proper float alignment in float bowl.
Main metering jet dirty, plugged or incorrect part.	1. If the main metering jet is plugged or dirty and excessive dirt is in fuel bowl, carburetor should be completely disassembled and cleaned.

Problem: ENGINE STARTS HARD WHEN HOT

Choke valve not opening completely.	1. Check for binding choke valve and/or linkage. Clean and free-up or replace parts as necessary. Do not oil choke linkage. 2. Check and adjust choke coil rod.
Engine flooded - Carburetor flooding.	See procedure under "Engine cranks, will not start".
No fuel in carburetor.	1. Check fuel pump. Run pressure and volume test. 2. Check float needle for sticking in seat, or binding float.
Leaking float bowl.	Fill bowl with fuel and look for leaks.

2GC CARBURETOR

INDEX

GENERAL DESCRIPTION

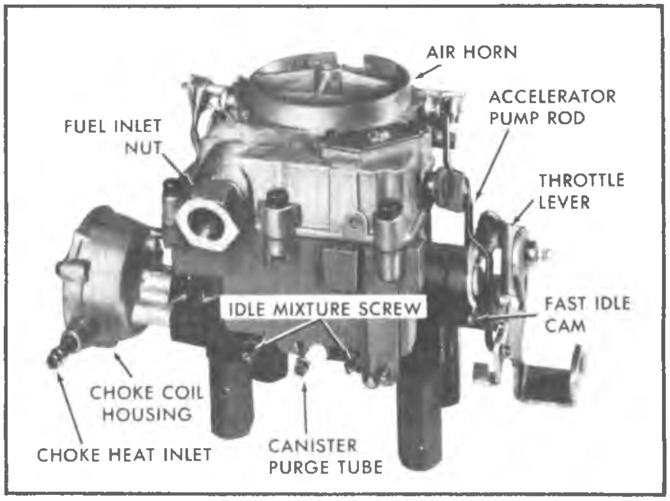

Fig. 19—2GC Carburetor - Front

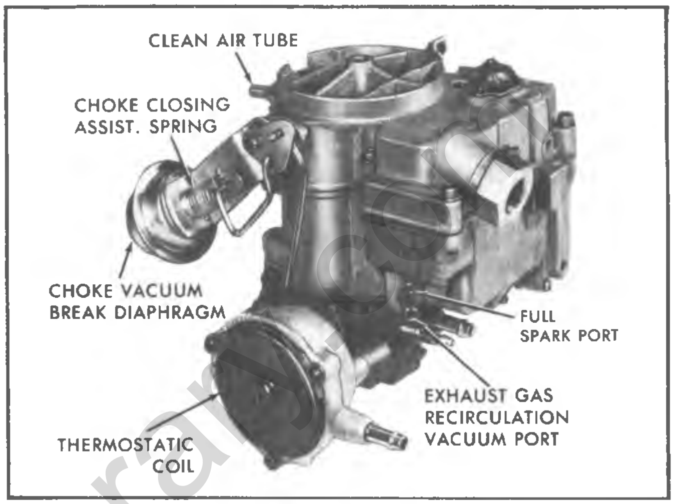

Fig. 20—2GC Carburetor - 3/4 View

The Model 2GC (Figs. 19 and 20) is equipped with an integral choke attached to the throttle body assembly. A large drilled hole in the air horn leads from inside the air horn bore to a vapor dome located in the air horn casting above the fuel in the float bowl.

Vapor canister purge ports are located in the throttle body casting. The ports connect by a channel to a tube pressed into the throttle body casting which leads directly to the vapor canister. This provides adequate purge during engine operation to remove all fuel vapors from the vapor collection canister.

The pump system has a raised cast in boss on the floor of the float bowl, which prevents entry of dirt into the accelerator pump - power valve fuel inlet passage. The pump plunger head has an expander spring beneath the pump cup to maintain good pump wall contact during pump operation.

The end of the pump plunger stem is upset in manufacturing to provide the "clipless" retaining feature. The pump plunger assembly may be removed from the inner lever by twisting upset end with small pliers until it breaks. The service pump assembly has a grooved end and is provided with a retaining clip.

Alphabetical code letters cast next to the vacuum and air tubes identify all hose connections. As mentioned, the code letters are alphabetical and should be referred to during carburetor installation on the engine.

The carburetor part number is stamped on the flat section of the float bowl next to the fuel inlet nut. When servicing the carburetor unit, refer to the Adjustment section for proper procedures and specifications.

THEORY OF OPERATION

INDEX

FLOAT SYSTEM (Fig. 21)

The float system controls the level of the fuel in the carburetor bowl. Fuel level is very important because it must be maintained to give proper metering through all operating ranges. As fuel is used from the carburetor bowl, the plastic float drops, moving the float needle off its seat allowing more fuel to enter the bowl, thereby keeping the fuel level constant.

The fuel bowl is internally vented by a large drilled hole which leads from inside the air horn bore to a vapor dome above the fuel in the float bowl. The internal vent provides a balance in air pressure to maintain constant air/fuel mixture ratios. Also, the large internal hole vents fuel vapors that form during periods of hot engine operation for improved hot idle and restart.

IDLE (LOW SPEED) SYSTEM (Fig. 22)

The idle system is used to provide the proper mixture ratios required during idle and low speed operation of the engine.

The idle system consists of the idle tubes, idle passages, idle air bleeds, idle mixture needles, off-idle discharge ports and idle needle discharge holes.

The idle mixture needle discharge holes provide fuel for curb engine idle. As the throttle valve is opened further, the off-idle discharge ports are exposed to manifold vacuum. These ports supply additional fuel mixture for off-idle engine requirements.

The fuel vapor collection canister is purged by ports located in the carburetor throttle body. Timed purge ports are connected from the carburetor bore to a common tube pressed into the throttle body casting. The tube connects directly to the vapor canister through a hose. Timed purge ports (one in each bore), located above the throttle valve near the off-idle discharge ports, purge the canister during off-idle and part throttle ranges of operation.

An Exhaust Gas Recirculation system is used to control oxides of nitrogen. A vacuum supply tube, located just beneath the spark tube on the float bowl, connects by a channel to purge ports located just above the throttle valve in the throttle body bore.

As the throttle valve is opened beyond the idle position, the E.G.R. ports are exposed to manifold vacuum which supplies a signal to the diaphragm in the E.G.R. valve. The two ports located in the throttle body bore are timed to provide just the right amount of vacuum to the E.G.R. valve diaphragm to control exhaust gases introduced into the intake manifold air/fuel mixtures.

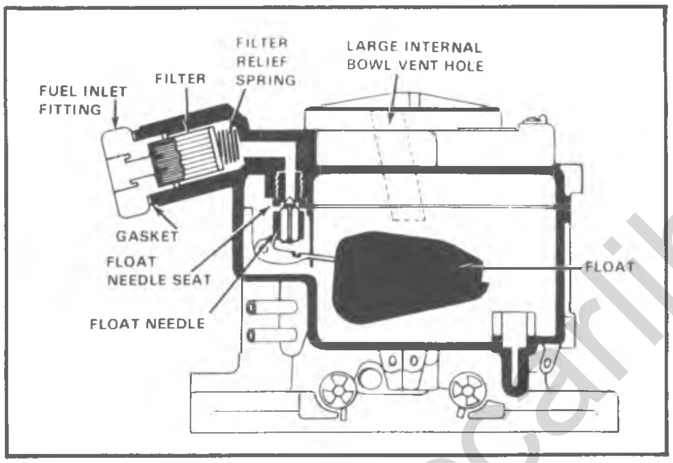

Fig. 21—Float System

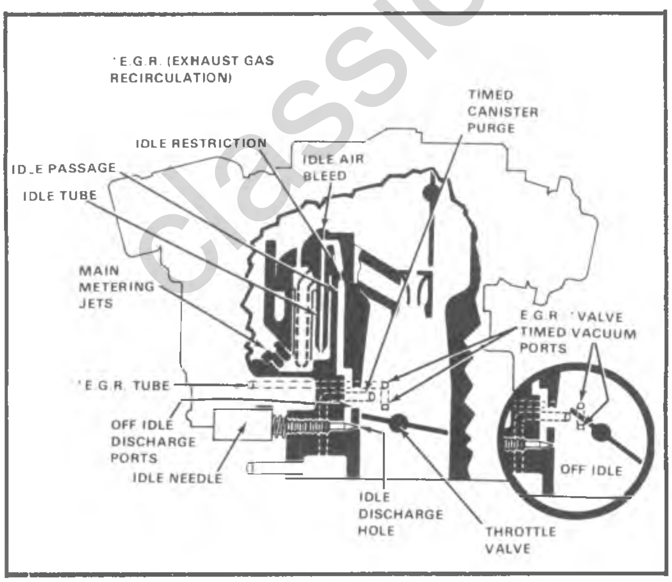

Fig. 22—Idle (Low Speed) System

MAIN METERING SYSTEM (Fig. 23)

As the throttle valves continue to open, the edge of the valves are gradually moving away from the wall of the carburetor bore, reducing the vacuum acting on the idle needle and off-idle discharge ports which gradually decreases fuel flow from the idle system.

With the increased throttle opening, there is increased air velocity in the venturi system. This causes a drop in pressure in the large venturi which is increased many times in the small venturi. Since the low pressure (high vacuum) is now in the small venturi, fuel will flow in the following manner:

Fuel from the float bowl passes through the main metering jets into the main wells and rises in the main well tubes. Plastic main well inserts are used in the main

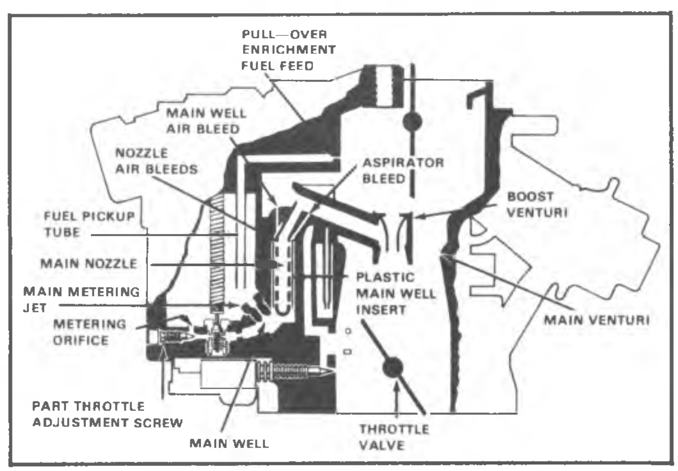

Fig. 23—Main Metering System

wells to provide smooth fuel flow for efficient metering. This results in improved fuel control in the off-idle, transfer, and part throttle range of operation. Air entering the main wells through the main well air bleeds is mixed with fuel through calibrated holes in the main well tube. The mixture moves up and out of the main discharge nozzles into a mixture (high speed) passage where more air is added. The mixture then travels down through the mixture passage to the small venturi where it is delivered to the air stream and on into the engine intake manifold.

On some models, an additional fuel circuit, called "pull-over" enrichment (P.O.E.), has been provided which supplements the main metering system of the carburetor unit. In order to provide sufficient enrichment to the main metering system at higher air flows, two additional fuel feeds are located in the air horn just above the choke valve. They connect directly to the fuel in the float bowl, through channels which lead directly into a tube that extends into the fuel just above the main metering jets. At approximately 8 pounds of air per minute and above, the extra fuel enrichment is added to supplement the main metering system.

With the addition of the pull-over enrichment system, leaner mixtures can be maintained during the part throttle or cruising ranges and extra fuel supplied at higher air flows to meet engine demands.

POWER ENRICHMENT SYSTEM (Fig. 24)

The conventional vacuum sensitive power piston and power valve are used for power requirements. When manifold vacuum drops to a pre-determined point (called power cut-in), the power piston moves downward against spring tension to force the power valve plunger off its seat.

Fuel then flows from the float bowl down past the valve plunger through a small calibrated orifice in the valve side and on into separate fuel channels leading to the power restrictions. The fuel passes through the power restrictions into the main fuel wells for desired enrichment at the main discharge nozzles. The power valve, located at the bottom of the fuel bowl, provides the correct fuel enrichment for power requirements.

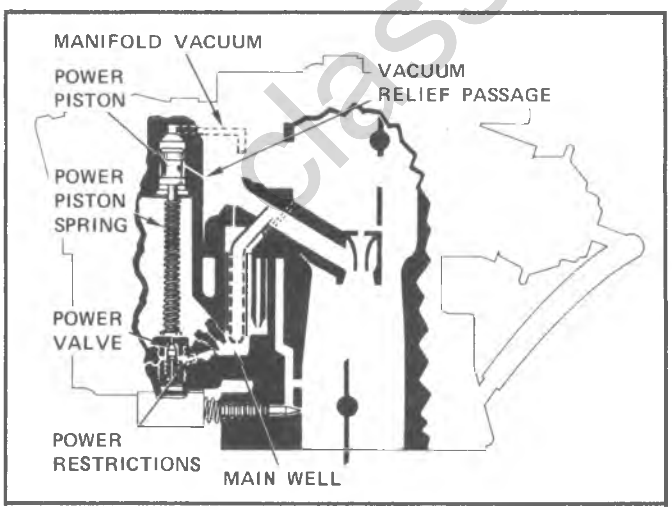

Fig. 24—Power Enrichment System

PUMP SYSTEM (Fig. 25)

When the throttle valve is opened rapidly, air flow and manifold vacuum change almost instantly, while the heavier fuel tends to lag behind causing a momentary leanness. The accelerator pump system provides the fuel necessary for smooth operation on rapid acceleration.

Fuel for acceleration is supplied by a double spring loaded pump plunger. The top and bottom springs combine to move the plunger so that a smooth sustained charge of fuel is delivered for acceleration.

Fuel is drawn into the pump well through the inlet check ball on the upward stroke of the pump plunger.

Downward motion of the pump plunger, as on acceleration, seats the aluminum inlet check ball and forces the fuel through the pump discharge passage where it unseats the pump discharge ball and passes on through to the pump jets, where it sprays into the venturi area.

An expander spring located beneath the pump cup ensures good contact between the lip of the pump cup and the pump well at all times. When the pump is not in operation, the pump cup unseats from the plunger head and acts as a vent for the pump well. If vapors form in the pump well during hot operation, they are vented between the head and pump cup out into the fuel bowl. Without this pump vent, vapor pressure in the pump well might force fuel from the pump system into the engine manifold, causing hard starting when the engine is hot.

The pump discharge ball in the accelerator pump passage prevents any pump pull-over or discharge of fuel from the pump nozzles when the accelerator is inoperative.

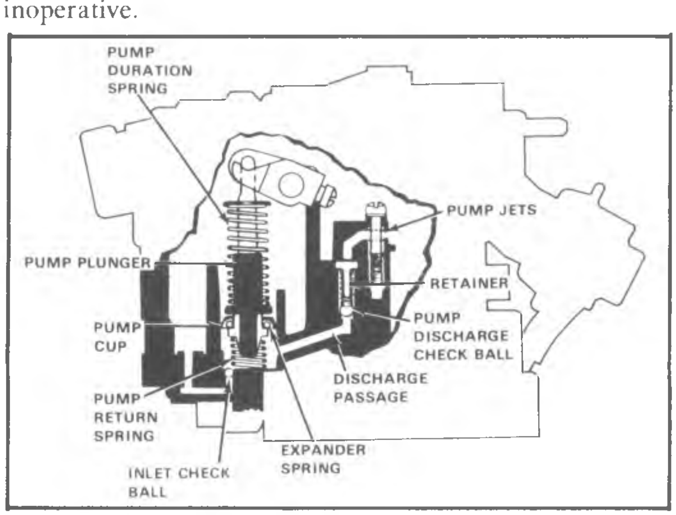

Fig. 25—Pump System

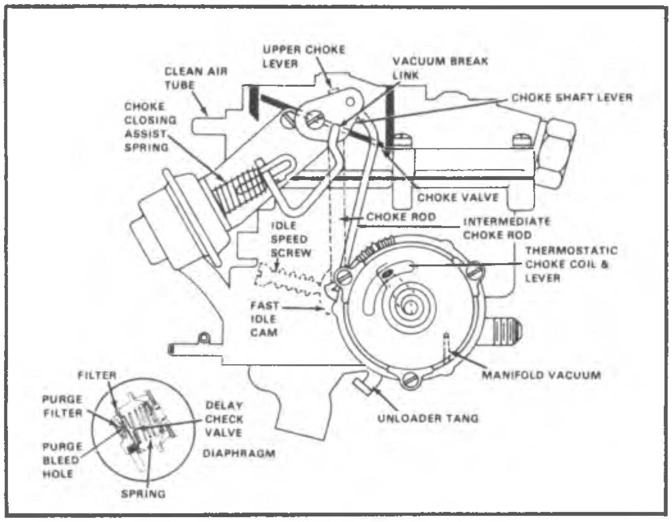

Fig. 26—Choke System

OPERATION OF CHOKE SYSTEM (Fig. 26)

The model 2GC carburetor has an integral choke housing and thermostatic coil assembly mounted on the carburetor throttle body.

The choke system operates as follows:

The thermostatic coil in the choke housing is calibrated to hold the choke valve closed when the engine is cold.

To close the choke valve, depress the accelerator pedal completely to allow the idle speed screw to clear the steps on the fast idle cam. At this point, tension of the thermostatic coil will rotate the choke valve to the closed position and the idle speed screw will come to rest on the highest step of the fast idle cam.

During engine starting, the high vacuum beneath the choke valve causes extra fuel to flow from the carburetor ports providing a rich mixture for quick engine starting. When the engine starts and is running, manifold vacuum is applied to the vacuum break diaphragm unit mounted on the carburetor air horn. The diaphragm unit, connected by linkage to the choke valve, opens the choke valve a predetermined amount against coil tension so that the air/fuel mixture will be lean enough so the engine will run without loading or stalling. When the choke valve moves to the vacuum break position, the fast idle cam will drop from the high step to a lower step when the throttle is opened. The vacuum break unit is delayed in operation by an internal bleed check valve. The delay check valve slows down further opening of the valve a few seconds until the engine will run on slightly leaner mixtures.

A choke closing assist spring is used on the vacuum diaphragm plunger stem. The spring assists in closing the choke valve, along with tension from the choke thermostatic coil, for improved cold starting. The choke closing assist spring only exerts pressure on the vacuum break rod to assist in closing the choke valve during engine starting. When the engine starts and the choke vacuum diaphragm seats, the closing spring retainer hits a stop on the plunger stem and no longer exerts pressure on the vacuum break rod.

A clean air purge feature is used on the vacuum break unit. The purpose of the clean air purge is to bleed air into the vacuum break passage and purge the system of any fuel vapors or dirt which might contaminate and plug the check valve located inside the diaphragm unit. The purge system consists of a small bleed hole located in the end cover of the vacuum break diaphragm.

A ball check is encased in the vacuum inlet tube. The ball seats when backfiring occurs to prevent contamination of filter. Under normal engine operation the ball is pulled off its seat by manifold vacuum.

During engine operation, vacuum acting upon the diaphragm unit pulls a small amount of filtered air through the bleed hole to purge the system.

Engine vacuum supplied through an orifice in the choke housing pulls heat from the manifold heat stove into the housing and gradually relaxes coil tension which allows the choke valve to continue opening through inlet air pressure pushing on the off-set choke valve.

The choke system is equipped with an unloader feature to partially open the choke valve should the engine become flooded or loaded.

To unload the engine, the accelerator pedal must be depressed so that the throttle valves are held wide open. A tang on the throttle lever contacts the fast idle cam and through the choke rod forces the choke valve slightly open. This allows extra air to enter the carburetor bores and pass on into the engine manifold to lean out the fuel mixtures so the engine will start.

MAINTENANCE AND ADJUSTMENT

INDEX

IDLE SPEED

1. With engine at normal operating temperature, air cleaner on, choke open, and air conditioning OFF, connect a tachometer to engine.
2. Set parking brake and block drive wheels.
3. Disconnect fuel tank hose from vapor canister.
4. Disconnect vacuum advance hose at distributor and plug hose.
5. Start engine, check timing and adjust as required. Reconnect vacuum advance hose.
6. With automatic transmission in Drive or manual transmission in Neutral, turn idle speed screw to specified rpm.
7. Shut off engine and remove tachometer.
8. Connect fuel tank hose to vapor canister.
9. Remove blocks from drive wheels.

IDLE MIXTURE

The idle mixture is factory preset and idle mixture screws are capped with plastic limiter caps. The cap permits screw to be turned about one turn leaner (clockwise) without breaking cap. The idle mixture is set to achieve the smoothest idle while maintaining emission levels within standards prescribed by Federal Law.

At major carburetor overhaul the idle mixture may be adjusted. Before suspecting idle mixture as cause of poor idle quality, check ignition system, distributor, timing, air cleaner, PCV system, evaporation emission control and compression pressures. Also check all vacuum hoses and connections for leaks and check torques of carburetor attachment bolts. Adjustment is made using a tachometer.

Refer to Vehicle Emission Control Information label on vehicle for latest certified specification information which may differ from specifications in manual.

Idle Mixture Adjustment

1. With engine at normal operating temperature, air cleaner on, choke open, and air conditioning OFF, connect a tachometer to engine.
2. Set parking brake and block drive wheels.
3. Disconnect fuel tank hose from vapor canister.
4. Disconnect vacuum advance hose at distributor and plug hose.
5. Start engine, check timing and adjust as required. Reconnect vacuum advances hose.
6. With engine at normal operating temperature (not hot), air conditioning off, and air cleaner installed, position transmission selector in drive (automatic transmission) or neutral (manual transmission).
7. Break off tab on mixture cap using needle nose pliers.
8. Adjust idle rpm to the higher of the two idle speeds specified. (Example 650/600).
9. Equally enrich (turn out) mixture screws until maximum idle speed is achieved. Reset speed if necessary to the higher specified idle speed.
10. Equally lean (turn in) mixture screws until the lower specified idle speed is achieved (Example 650/600). Connect fuel tank vent hose.

PUMP ROD ADJUSTMENT (Fig. 27)

1. Back out idle speed adjusting screw.
2. Hold throttle valve completely closed.
3. Gauge from top of air horn ring to top of pump rod.
4. If adjustment is required, bend rod.

FAST IDLE CAM ADJUSTMENT (Fig. 28)

1. Turn idle speed screw in until it just contacts low step of fast idle cam. Then, turn screw in one full turn.
2. Place idle speed screw on second step of fast idle cam against highest step.
3. Place gauge between upper edge of choke valve and wall of air horn.
4. If adjustment is required, bend choke lever tang.

CHOKE UNLOADER ADJUSTMENT (Fig. 29)

1. With throttle valves held in wide open position, place choke valve toward closed position.
2. Place specified gauge between upper edge of choke valve and air horn casting to check clearance.
3. If adjustment is required, bend tang on throttle lever.

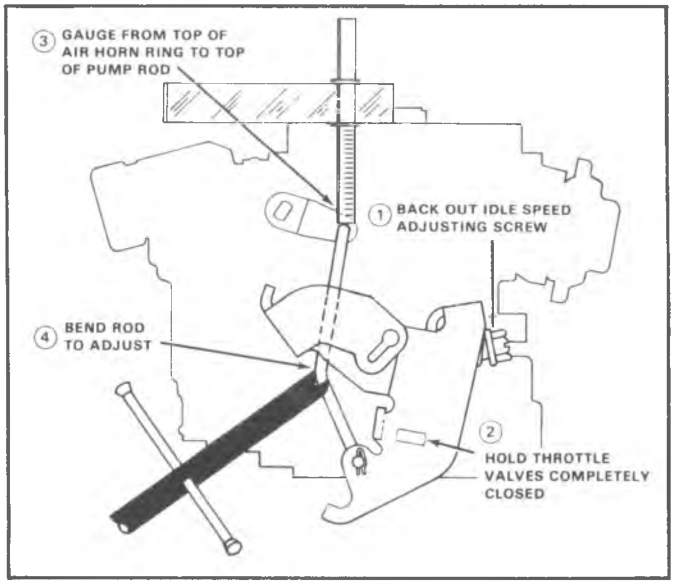

Fig. 27—Pump Rod Adjustment

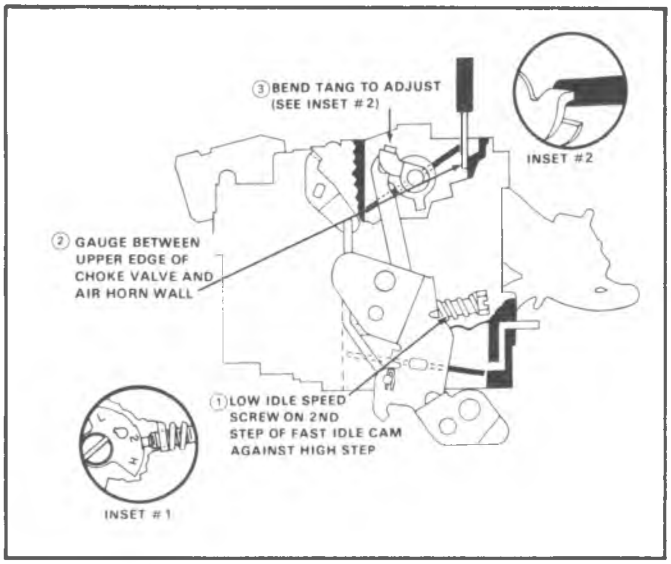

Fig. 28—Fast Idle Cam Adjustment

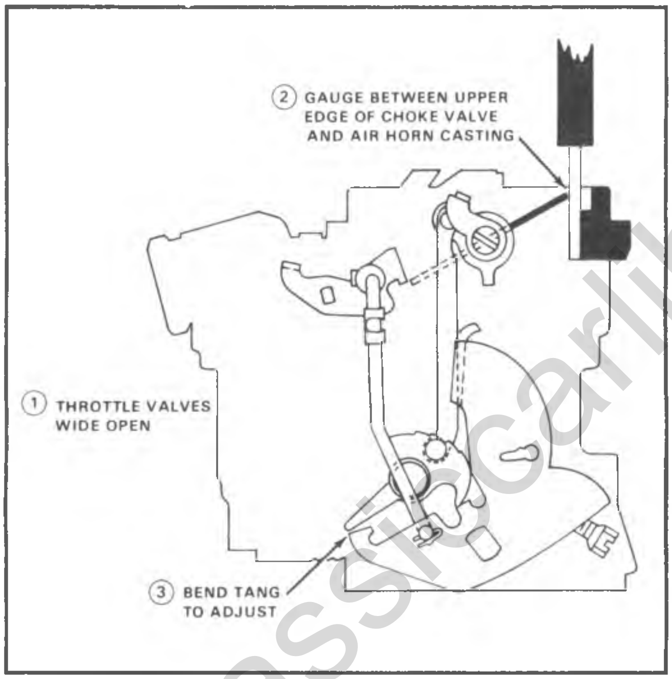

Fig. 29—Choke Unloader Adjustment

INTERMEDIATE CHOKE ROD ADJUSTMENT (Fig. 30)

1. Remove thermostatic cover coil, gasket, and inside baffle plate assembly by removing three attaching screws and retainers.
2. Place idle speed screw on the highest step of fast idle cam.
3. Close choke valve by pushing up on intermediate choke lever.
4. Edge of coil lever inside choke housing must line up with edge of plug gauge.
5. Bend intermediate choke rod at point shown to adjust.

AUTOMATIC CHOKE COIL ADJUSTMENT (Fig. 31)

1. Place idle speed screw on the highest step of fast idle cam.
2. Loosen thermostatic shoke coil cover retaining screws.
3. Rotate choke cover against coil tension until choke valve begins to close. Continue rotating until index mark lines up with specified point on choke housing.
4. Tighten choke cover retaining screws.

VACUUM BREAK ADJUSTMENT

1. Seat the vacuum break diaphragm using an outside vacuum source.
2. Cover vacuum break bleed hole as shown using a small piece of tape, so that diaphragm unit will hold inward and not bleed down.
3. Place idle speed screw on high step of fast idle cam.

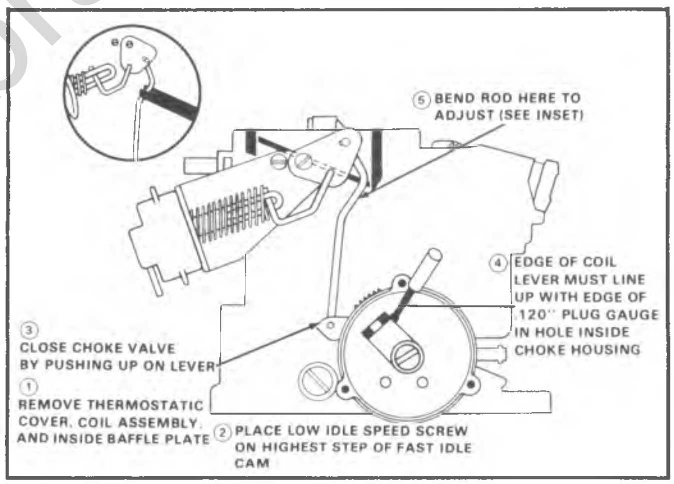

Fig. 30—Intermediate Choke Rod Adjustment

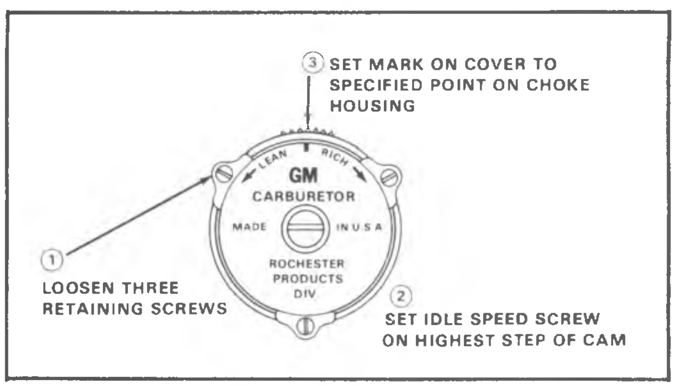

Fig. 31—Automatic Choke Coil Adjustment

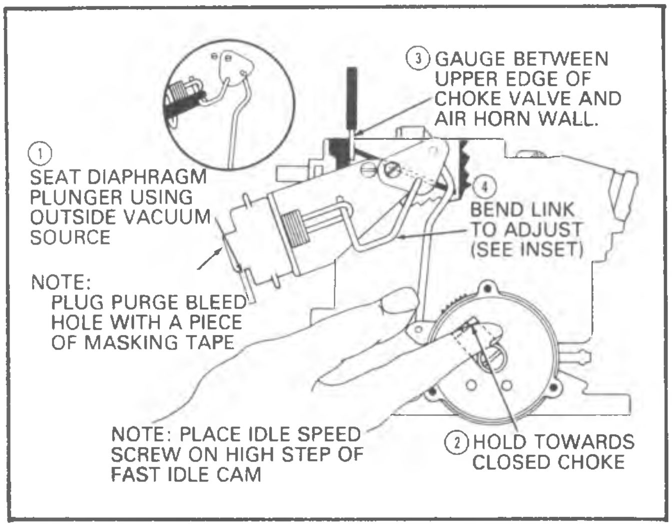

Fig. 32—Vacuum Break Adjustment

4. Hold choke coil lever inside choke housing towards the closed choke position.
5. Gauge between upper edge of choke valve and air horn wall.
6. Bend vacuum break rod at point shown to adjust.
7. After adjustment, remove piece of tape covering small bleed hole at rear of vacuum break diaphragm unit. Reconnect vacuum hose.

SERVICE OPERATIONS

INDEX

CARBURETOR REPLACEMENT (Fig. 33)

Removal

Flooding, stumble on acceleration and other performance complaints are, in many instances, caused by presence of dirt, water, or other foreign matter in carburetor. To aid in diagnosis, carburetor should be carefully removed from engine without draining fuel from bowl. Contents of fuel bowl may then be examined for contamination as carburetor is disassembled. Check filter.

1. Remove air cleaner and gasket.
2. Disconnect fuel and vacuum lines from carburetor.
3. Disconnect fresh air hose and choke hose from choke system.
4. Disconnect accelerator linkage.
5. If equipped with automatic transmission, disconnect downshift cable.
6. Remove carburetor attaching bolts and remove carburetor.
7. Remove insulator.

Installation

It is good shop practice to fill carburetor bowl before installing carburetor. This reduces strain on starting motor and battery and reduces the possibility of backfiring while attempting to start engine. A small supply of fuel will enable carburetor to be filled and the operation of float and intake needle and seat to be checked. Operate throttle lever several times and check discharge from pump jets before installing carburetor.

1. Clean throttle body and intake manifold sealing surfaces.

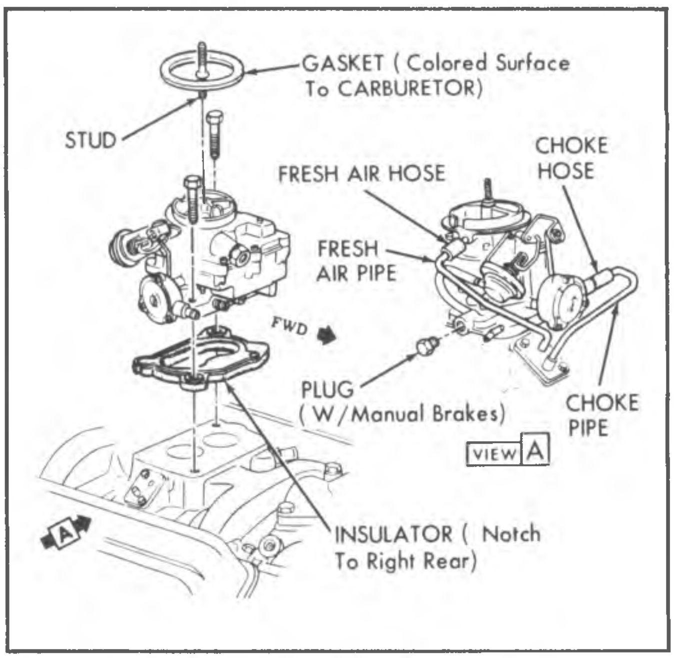

Fig. 33—Carburetor and Choke Pipes, V8, 2Bbl.

Fig. 34—Fuel Filter Replacement

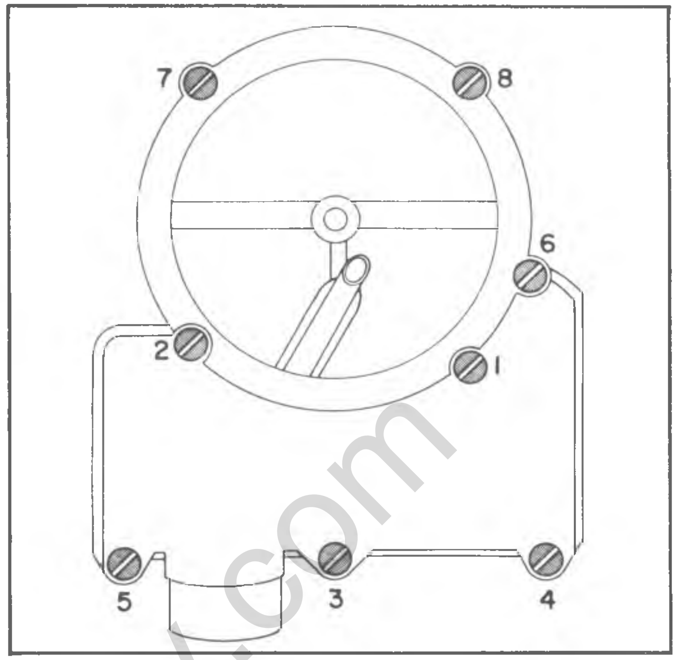

Fig. 35—Air Horn Tightening Sequence

2. Install new insulator.
3. Position carburetor over intake manifold and install bolts. Tighten bolts simultaneously to 145 in. lbs.
4. Connect downshift cable and adjust as required.
5. Connect accelerator linkage.
6. Connect fresh air hose and choke hose to choke system.
7. Connect fuel and vacuum lines.
8. Install air cleaner.
9. Refer to Maintenance and Adjustment and check idle speed.

FUEL FILTER REPLACEMENT (Fig. 34)

A plugged fuel filter will restrict fuel flow or by-pass foreign material into carburetor and will result in a loss of engine power or rough (pulsating) engine feel, especially at high engine speeds.

1. Disconnect fuel line connection at inlet fuel filter nut.
2. Remove inlet fuel filter nut from carburetor.
3. Remove filter element and spring.
4. Install element spring and filter element in carburetor.
5. Install new gasket on inlet fitting nut and install nut in carburetor and tighten securely.
6. Install fuel line and tighten connector.

AIR HORN TIGHTENING SEQUENCE

Refer to figure 35 for proper air horn tightening sequence.

DIAGNOSIS

GENERAL

When carburetor troubles are encountered they can usually be diagnosed and corrected with an adjustment as outlined below and under Maintenance and Adjustments.

Before diagnosing the carburetor as the trouble area, check and diagnose the following:

1. Fuel Supply
2. Fuel pump pressure and volume.
3. Plugged fuel filter or fuel lines.
4. Linkage and emission control systems.
5. Engine compression.
6. Ignition system firing voltage.
7. Ignition spark timing.
8. Spark plugs
9. Secure intake manifold.
10. Engine temperature.

Use the following tables to diagnose carburetor.

Problem: ENGINE IDLES ROUGH AND STALLS

Idle speed setting.	Re-set low and curb idle speeds under maintenance and adjustments.
Manifold vacuum hoses disconnected or improperly installed.	Check all vacuum hoses leading into the manifold or carburetor base for leaks or being disconnected. Install or replace as necessary.
Carburetor loose on intake manifold.	Torque carburetor to manifold bolts (10-14 ft. lbs.).
Intake manifold is loose or gaskets are defective.	Using a pressure oil can, spray light oil or kerosene around manifold legs and carburetor base. If engine RPM changes, tighten or replace the manifold gaskets or carburetor base gaskets as necessary.
Hot idle compensator not operating (where used.)	Normally the hot idle compensator should be closed when engine is running cold and open when engine is hot (approx. 140°F at comp.) replace if defective.
Carburetor flooding. NOTE: Also check carburetor flooding when engine cranks (turn over) but will not start or starts hard when cold.	1. Remove air horn and check float adjustment, as specified in carburetor overhaul section. 2. Check float needle and seat for proper seal. If a needle and seat tester is not available, mouth suction can be applied to the needle seat with needle installed. If the needle is defective, replace with a factory matched set. 3. Check float for being loaded with fuel, bent float hanger or binds in the float arm. NOTE: A solid float can be checked for fuel absorption by lightly squeezing between fingers. If wetness appears on surface or float feels heavy (check with known good float), replace the float assembly. 4. If excessive dirt is found in the carburetor, clean the fuel system and carburetor. Replace fuel filter as necessary.

Problem:

ENGINE CRANKS (TURNS OVER) BUT WILL NOT START OR STARTS HARD WHEN COLD.

POSSIBLE CAUSE	CORRECTIVE ACTION
Improper starting procedure used.	Check proper starting, as outlined in the owner's manual.
No fuel in gas tank	Add fuel. Check fuel gauge for proper operation.
Choke valve not closing sufficiently when cold.	Adjust the choke coil rod.
Choke valve or linkage binding or sticking.	Realign the choke valve or linkage as necessary. If caused by dirt and gum, clean with automatic choke cleaner. Do not oil choke linkage. If parts are replaced, check adjustments.
Inoperative choke or vacuum break.	1. Inspect choke and vacuum break for worn or missing parts. Replace and adjust as required. 2. Inspect choke thermostatic coil for proper operation. Replace and adjust as required.
No fuel in carburetor.	1. Remove fuel line at carburetor. Connect hose to fuel line and run into metal container. Remove the high tension coil wire from center tower on distributor cap and ground. Crank over engine – if there is no fuel discharge from the fuel line, check for kinked or bent lines. Disconnect fuel line at tank and blow out with air hose, reconnect line and check again for fuel discharge. If none, replace fuel pump. Check pump for adequate flow, as outlined in service manual. 2. If fuel supply is o.k., check the following: a. Inspect fuel filter. If plugged replace. b. If filter is o.k., remove air horn and check for a bind in the float mechanism or a sticking float needle. If o.k., adjust float as specified in carburetor overhaul section.
Engine Flooded. NOTE: To check for flooding, remove air cleaner, with engine off and look into carburetor bore. Fuel will be dripping off nozzle and/or carburetor will be very wet.	Check proper carburetor unloading procedure. Depress the accelerator to the floor and check the carburetor to determine if the choke valve is opening. If not, adjust the throttle linkage and unloader, as specified.
Carburetor flooding	NOTE: Before removing the carburetor air horn, use the following procedure which may eliminate the flooding. 1. Remove the fuel line at the carburetor and plug. Crank and run the engine until the fuel bowl runs dry. Turn off the engine and connect fuel line. Then re-start and run engine. This will usually flush dirt past the carburetor float needle and seat. 2. If dirt is in fuel system, clean the system and replace fuel filter as necessary. If excessive dirt is found, remove the carburetor unit. Disassemble and clean. 3. Check float needle and seat for proper seal. If a needle and seat tester is not available, apply mouth suction to the needle seat with needle installed. If the needle is defective, replace with a factory matched set. 4. Check float for being loaded with fuel, bent float hanger or binds in the float arm. NOTE: Check float for fuel absorption by lightly squeezing between fingers. If wetness appears on surface or float feels heavy (Check with known good float), replace the float assembly. 5. Adjust float as specified in carburetor overhaul section.

Problem: ENGINE STARTS AND STALLS

Engine does not have enough fast idle speed when cold.	Check and re-set the fast idle setting and fast idle cam.
Choke vacuum break unit is not adjusted to specification or unit is defective.	1. Adjust vacuum break to specification. 2. If adjusted O.K., check the vacuum break for proper operation as follows: On the externally mounted vacuum break unit, connect a piece of hose to the nipple on the vacuum break unit and apply suction by mouth or use tool J-23418 to apply vacuum. Plunger should move inward and hold vacuum. If not, replace the unit. NOTE: Always check the fast idle cam adjustment before adjusting vacuum break unit.
Choke coil rod out of adjustment.	Adjust choke coil rod.
Choke valve and/or linkage sticking or binding.	1. Clean and align choke valve and linkage. Replace if necessary. 2. Re-adjust if part replacement is necessary.
Idle speed setting	Adjust low and curb idle speeds to specifications on label in engine compartment.
Not enough fuel in carburetor.	1. Check fuel pump pressure and volume. 2. Check for partially plugged fuel inlet filter. Replace if dirty. 3. Remove air horn and check float adjustments as specified in carburetor overhaul section.
Carburetor flooding. NOTE: Also check carburetor flooding when engine cranks (turn over) but will not start or starts hard when cold.	1. Check float needle and seat for proper seal. If a needle and seat tester is not available, mouth suction can be applied to the needle seat with needle installed. If needle is defective, replace with a factory matched set. 2. Check float for being loaded with fuel, bent float hanger or binds in the float arm. NOTE: Check float for fuel absorption by lightly squeezing between fingers. If wetness appears on surface or float feels heavy (check with known good float), replace the float assembly. 3. Check float adjustments as specified in carburetor overhaul section. 4. If excessive dirt is found in the carburetor, clean the fuel system and carburetor. Replace fuel filter as necessary.

Problem: ENGINE RUNS UNEVEN OR SURGES

POSSIBLE CAUSE	CORRECTIVE ACTION
Fuel Restriction	Check all hoses and fuel lines for bends, kinks or leaks. Straighten and secure in position. Check all fuel filters. If plugged or dirty - replace.
Dirt or water in fuel system.	Clean fuel tank and lines. Remove and clean carburetor.
Fuel level	Adjust float as specified in carburetor overhaul section. Check for free float and float needle valve operation.
Main metering jet defective, loose or incorrect part.	Replace as necessary.
Power system in carburetor not functioning properly. Power valve sticking in down position.	Free up or replace as necessary.
Vacuum leakage	It is absolutely necessary that all vacuum hoses and gaskets are properly installed, with no air leaks. The carburetor and manifold should be evenly tightened to specified torque.

Problem: POOR FUEL ECONOMY

Engine needs complete tune-up.	Check engine compression. Examine spark plugs, (if dirty or improperly gapped, clean and re-gap or replace). Check ignition point dwell, condition, readjust ignition points if necessary and check and reset ignition timing. Clean or replace air cleaner element if dirty. Check for restricted exhaust system and intake manifold for leakage, make sure all vacuum hoses are connected correctly.
Choke valve not fully opening.	1. Clean choke and free up linkage. 2. Check choke coil rod for proper adjustment. Reset to specifications.
Fuel leaks.	Check fuel tank, fuel lines and fuel pump for any fuel leakage.
Power system in carburetor not functioning properly. Power valve sticking in up position.	Free up or replace as necessary.
High fuel level in carburetor or carburetor flooding.	1. Check for dirt in the needle and seat. Test using suction by mouth or needle seat tester. If defective, replace needle and seat assembly with factory matched set. 2. Check for loaded float. 3. Re-set carburetor float as specified in carburetor overhaul section. 4. If excessive dirt is present in the carburetor bowl, the carburetor should be cleaned.
Fuel being pulled from accelerator system into venturi through pump jet.	Run engine at RPM where nozzle is feeding fuel. Observe pump jet. If fuel is feeding from jet, check pump discharge ball for proper seating by filling cavity above ball with fuel to level of casting. No "leak down" should occur with discharge ball in place. Re-stake or replace leaking check ball, defective spring, or retainer.
Air bleeds or fuel passages in carburetor dirty or plugged.	Clean carburetor or overhaul as necessary.

Problem: ENGINE HESITATES ON ACCELERATION

Defective accelerator pump system NOTE: A quick check of the pump system can be made as follows. With the engine off, remove air cleaner and look into the carburetor bores and observe pump stream, while briskly opening throttle valve. A full stream of fuel should emit from pump jet and strike near the center of the venturi area.	1. Remove air horn and check pump cup. If cracked, scored or distorted, replace the pump plunger. 2. Check the pump discharge ball for proper seating and location. The pump discharge ball is located in a cavity next to the pump well. To check for proper seating, remove air horn and gasket and fill cavity with fuel. No "leak down" should occur. Restake and replace check ball if leaking. Make sure discharge ball, spring, and retainer are properly installed.
Dirt in pump passages or pump jet.	Clean and Blow out with compressed air.
Fuel level.	Check for sticking float needle or binding float. Free up or replace parts as necessary. Check and reset float level as specified in carburetor overhaul section.
Leaking air horn to float bowl gasket.	Torque air horn to float bowl using proper tightening procedure.
Carburetor loose on manifold.	Torque carburetor to manifold bolts. (10-14 ft. lbs.).

Problem: NO POWER ON HEAVY ACCELERATION OR AT HIGH SPEED

Carburetor throttle valve not going wide open. (Check by pushing accelerator pedal to floor).	Adjust throttle linkage to obtain wide open throttle in carburetor.
Dirty or plugged fuel filter.	Replace with a new filter element.
Power system not operating.	Check power valve for free up and down movement.
Float level too low.	1. Check and reset float level as specified in carburetor overhaul section.
Float not dropping far enough into float bowl.	Check for binding float hanger and for proper float alignment in float bowl.
Main metering jet dirty, plugged or incorrect part.	1. If the main metering jet is plugged or dirty and excessive dirt is in fuel bowl, carburetor should be completely disassembled and cleaned.

Problem: ENGINE STARTS HARD WHEN HOT

Choke valve not opening completely.	1. Check for binding choke valve and/or linkage. Clean and free-up or replace parts as necessary. Do not oil choke linkage. 2. Check and adjust choke coil rod.
Engine flooded - Carburetor flooding.	See procedure under "Engine cranks, will not start".
No fuel in carburetor.	1. Check fuel pump. Run pressure and volume test. 2. Check float needle for sticking in seat, or binding float.
Leaking float bowl.	Fill bowl with fuel and look for leaks.

4MV QUADRAJET CARBURETOR

The 1975 Non-California and California 350/400 V8 vehicle of 6200 pounds gross vehicle weight (G.V.W.) and above will continue to use the basic 1974 4MV carburetor.

Refer to specifications section for 1975 4MV carburetor adjustment specifications. Refer to 1974 Light Duty Truck Service Manual for service procedures.

M4MC/M4MCA QUADRAJET CARBURETOR

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GENERAL DESCRIPTION

The M4MC-M4MCA model Quadrajet carburetors (fig. 36) are two stage carburetors of downdraft design. The revised carburetors include the proven design features of previous models. The triple venturi system (with 1-7/32" venturi) is used on the primary side of the Quadrajet carburetor, with small 1-3/8" throttle valve bores. The triple venturi stack-up, plus small primary throttle valve bores, results in good fuel control during idle and part throttle operation.

The secondary side has two large bores (2-1/4"). Using the air valve principle in the secondary side, fuel is metered in direct proportion to the air passing through the secondary bores. The carburetor part number is stamped on a vertical section of the float bowl, near the secondary throttle lever. Refer to the part number on the bowl when servicing the carburetor. When replacing the float bowl assembly, follow the manufacturer's instructions contained in the service package so that the part number can be transferred to the new float bowl.

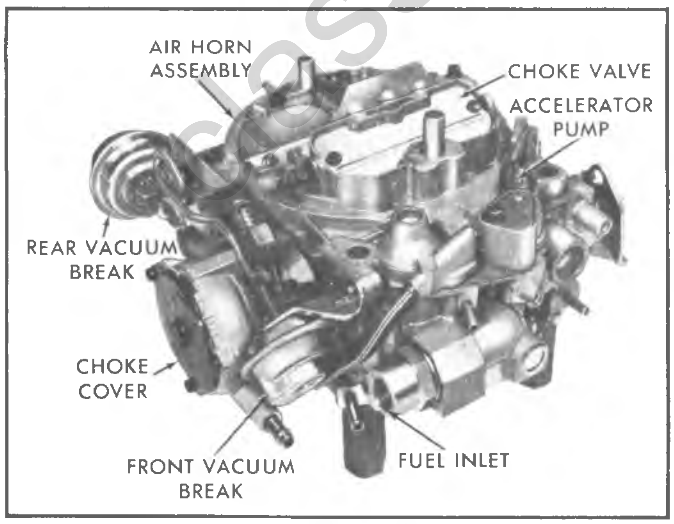


Fig. 36—M4MC/M4MCA Quadrajet Carburetor

The 1975 M4MC/M4MCA Quadrajet carburetors have the following features:

1. All models are calibrated to meet performance and emission requirements for the 1975 engines.
2. The choke system has a choke housing and thermostatic coil mounted on the carburetor float bowl. In addition, a dual vacuum break system is incorporated to improve choke operation during the warm-up period.

A two step fast idle cam is used on all models. A separate tang is added to the fast idle cam on models for the 454" V-8 engine to provide a fast idle cam "pull-off" feature.

3. For ease of field serviceability, alphabetical code letters are included in the air horn, float bowl, and throttle body at external tube locations to identify air, vacuum, and fuel hose routings under the hood.
4. A 2" pleated paper fuel inlet filter is used for more fuel filtering capacity. A longer fuel inlet nut is mounted in the side inlet location to accommodate the 2" filter.
5. The float bowl casting is designed to use a new plastic filler block above the float chamber, and a metal baffle added to the pump well fill slot, to reduce fuel slosh in the float chamber during severe vehicle manuevers. A new float assembly is used with revisions to the float chamber.
6. M4MC and M4MCA models for 350 and 400 V-8 engine applications use a "windowless" type needle seat for better fuel handling in the float bowl.
7. The Adjustable Part Throttle (A.P.T.) feature is changed in that an adjustable metering rod assembly, operating in a fixed jet, has been added to the float bowl on the choke housing side of all models. The threaded metering rod is adjusted at the factory to provide close tolerance control of fuel flow to the main metering system, thereby better

controlling air/fuel ratios during the part throttle range.

On models designated M4MCA, a barometric pressure-sensitive aneroid (sometimes called a "bellows") is included as an integral part of the threaded A.P.T. metering rod assembly. The aneroid, being sensitive to air pressure change (such as altitude), responds to a change in air pressure to maintain control of part throttle air/fuel ratios.

8. An expander (garter) spring has been added beneath the plunger cup on the accelerator pump assembly for improved pump fuel delivery.

9. A deceleration throttle step vacuum unit with bracket, is used on M4MCA models for California Heavy Duty Trucks with the 454 V-8 engine. The vacuum unit and bracket assembly is mounted on the float bowl (similar to the Idle Stop Solenoid location on some models). When manifold vacuum is high, such as on deceleration, the vacuum diaphragm plunger moves outward, contacting the throttle lever, to open the primary throttle valves slightly to lean out the rich air/fuel mixture in the intake manifold. The deceleration throttle stop vacuum unit requires new adjustment procedures.

10. On some models, an integral baffle has been added to the bottom side of the secondary air valve. The baffle provides improved mixture distribution from the secondary side at higher air flows.

11. Some models have a milled slot added at the larger diameter of the secondary metering rod tip. The milled slot allows enough fuel to by-pass the orifice plate to keep the secondary main wells full of fuel when the air valve is in the closed position. This insures adequate fuel supply in the main wells at all times to give immediate fuel delivery from the secondary discharge nozzles.

The primary side of the carburetor has six systems of operation. They are float, idle, main metering, power, pump, and choke. The secondary side has one metering system which supplements the primary main metering system and receives fuel from a common float chamber.

THEORY OF OPERATION

INDEX

FLOAT SYSTEM (Fig. 37)

The float system operates in the following manner:

Fuel from the engine fuel pump enters the carburetor fuel inlet passage. It passes through the pleated paper filter element, fuel inlet valve, and on into the float bowl chamber. As the incoming fuel fills the float bowl to the prescribed level, the float pontoon rises and forces the fuel inlet valve closed, shutting off fuel flow. As fuel is used from the float bowl, the float drops allowing the float valve to open, when more fuel again fills the bowl. This cycle continues, maintaining a constant fuel level in the float bowl. A new float assembly is used for improved fuel handling in the float bowl.

The float pontoon is solid and is made of a light weight closed cell plastic material. This feature gives added buoyancy to allow the use of a single float to maintain constant fuel levels. A float pull clip, fastened to the float valve, hooks over the edge of the float arm at the center rear. Its purpose is to assist in lifting the float valve off its seat whenever fuel level in the float bowl is low.

CAUTION: *Do not place pull clip through small holes in top of float arm. Severe flooding will result.*

On some models, no side windows are used in the float valve seat so that all fuel will be discharged over the top of the float valve seat to control fuel turbulence in the float bowl.

The carburetor float chamber is internally vented by a vertical slot, cast in the air horn, located at the rear of the primary venturis, and by a pressed-in vent tube

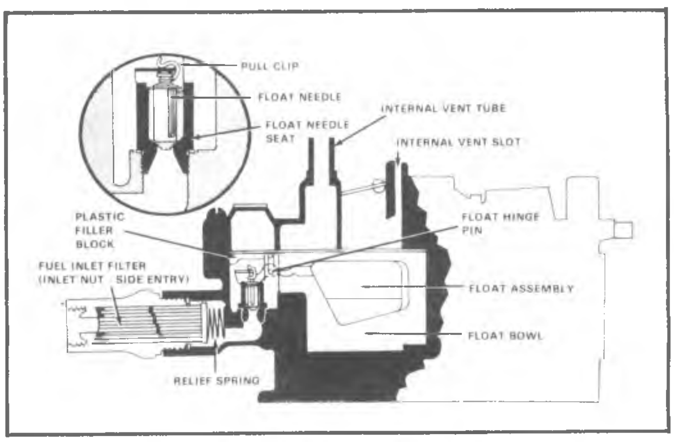


Fig. 37—Float System

located in the air horn. The purpose of the vertical vent slot and vent tube is to balance air pressure acting on the fuel in the float bowl with air flow through the carburetor bores. In this way, balanced air/fuel ratios are maintained throughout all ranges of carburetor operation. Also, during periods of hot engine operation, the vents are used to relieve vapor pressures that build up in the float bowl, thereby preventing the pushing of raw fuel through the discharge nozzles into the engine to cause hard hot restarts.

The float bowl casting is revised to accommodate the addition of a new A.P.T. metering rod assembly. As a result, a new air horn gasket and new plastic filler block are used. The new plastic filler block, located in the top of the float chamber over the float valve, is used to prevent fuel slosh in the float bowl. In addition, a metal baffle is added to the pump well fill slot to further reduce fuel slosh in the float chamber.

New float bowl disassembly and assembly procedures are required with the addition of the A.P.T. metering rod assembly, new plastic filler block, and pump well baffle.

IDLE SYSTEM

Each bore of the Quadrajet carburetor has a separate and independent idle system to supply the correct air/fuel mixture ratios during idle and off-idle operation. The idle system is used during this period because air flow through the carburetor venturi is not great enough to obtain efficient metering from the main discharge nozzles.

The idle system operates as follows:

During curb idle, the throttle valves are held slightly open by the idle speed screw or idle stop solenoid plunger. The small amount of air passing between the throttle valves and bores is regulated by this screw or plunger to give the engine the desired idle speed. Since the engine requires very little air for idle and low speeds, fuel is added to the air to produce a combustible mixture by the direct application of vacuum (low pressure) from the engine manifold to the idle discharge holes below the throttle valves. With the idle discharge holes in a very

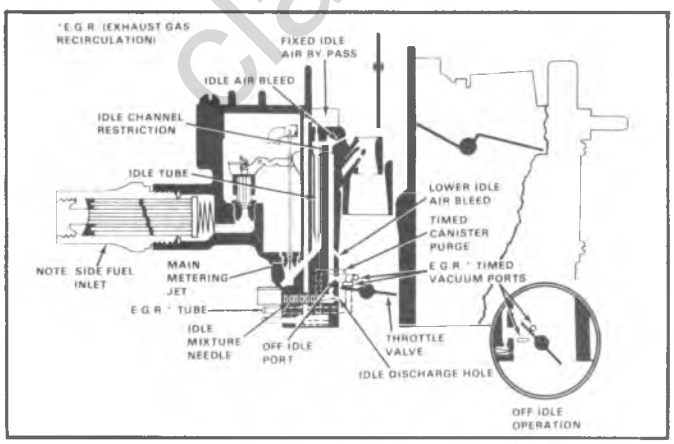


Fig. 38—Idle System

low pressure area and the fuel in the float bowl vented to atmosphere (high pressure), the idle system operates as follows:

Fuel flows from the float bowl down through the main metering jets into the main fuel wells. It is picked up in the main wells by the two idle tubes (one for each bore) which extend into the wells. The fuel is metered at the lower tip of each idle tube and passes up through the tube. The fuel is mixed with air at the top of each idle tube through an idle air bleed.

Then the fuel mixture crosses over to the idle down channels where it is mixed with air at the side idle bleed located just above the idle channel restriction. The mixture continues down through the calibrated idle channel restrictions, past the lower idle air bleeds and off-idle discharge ports where it is further mixed with air. The air/fuel mixture moves down to the idle mixture needle discharge holes where it enters the carburetor bores and blends with the air passing the slightly open throttle valves. The combustible air/fuel mixture then passes through the intake manifold to the engine cylinders.

The idle mixture needles are adjusted at the factory to blend the correct amount of fuel mixture from the idle system with the air entering the engine at idle. Turning the idle mixture needles inward (clockwise) decreases the idle fuel discharge and turning the mixture needles outward (counter- clockwise) enriches the engine idle mixture. Idle mixture needles are adjusted at the factory and then limiter caps are installed to discourage idle mixture needle readjustment in the field.

M4MC-M4MCA carburetor models have a fixed idle air bypass system. This consists of air channels which lead from the top of each carburetor bore in the air horn to a point below each throttle valve. At normal idle, extra air passes through these channels supplementing the air passing by the slightly opened throttle valves. The purpose of the idle air bypass system is to allow reduction in the amount of air going past the throttle valves so they can be nearly closed at idle. This reduces the amount of air flowing through the carburetor venturi to prevent the main fuel nozzles from feeding during idle operation. The venturi system is very sensitive to air flow and where larger amounts of idle air are needed to maintain idle speed, the fixed idle air bypass system is used.

As the primary throttle valves are opened from curb idle to increase engine speed, additional fuel is needed to combine with the extra air entering the engine. This is accomplished by the slotted off-idle discharge ports. As the primary throttle valves open they pass by the off-idle ports, gradually exposing them to high engine vacuum below the throttle valves. The additional fuel added from the off-idle ports mixes with the increasing air flow past the opening throttle valves to meet increased engine air and fuel demands.

Further opening of the throttle valves increases the air velocity through the carburetor venturi sufficiently to cause low pressure at the lower idle air bleeds. As a result, fuel begins to discharge from the lower idle air bleed holes and continues to do so throughout operation of the part throttle to wide open throttle ranges, supplementing the main discharge nozzle delivery.

EXHAUST GAS RECIRCULATION (E.G.R.) (Fig. 38)

An Exhaust Gas Recirculation (E.G.R.) system is used on all models to control oxides of nitrogen (NOx) emissions. The E.G.R. valve is operated by a vacuum signal taken from the carburetor. Two punched ports, one located just above the throttle valve and the other near the upper edge of the throttle body casting, provide a timed vacuum signal port for E.G.R. valve operation in the off-idle and part throttle ranges of the carburetor.

The purpose of the E.G.R. system is to supply a metered amount of exhaust gases to the combustion mixtures and lower combustion temperatures, thereby reducing oxides of nitrogen during these ranges of engine operation.

The port system operates as follows:

As the throttle valve is opened beyond the idle position, the first vacuum port for the E.G.R. system is exposed to manifold vacuum to supply a vacuum signal to the E.G.R. valve. To control the vacuum signal at the lower port, the upper port bleeds air into the vacuum channel and modulates the amount of vacuum signal supplied by the lower E.G.R. port. In this manner, the E.G.R. valve can be timed for precise metering of exhaust gases to the intake manifold, dependent upon location of the ports in the carburetor bore and degree of throttle valve opening.

As the throttle valves are opened further in the part throttle range, the upper port ceases to function as an air bleed and is gradually exposed to manifold vacuum to supplement the vacuum signal at the lower port and maintain correct E.G.R. valve position.

The upper and lower vacuum ports connect to a cavity in the throttle body which, in turn, through a passage, supply the vacuum signal to an E.G.R. tube pressed into the front corner of the throttle body casting. The tube in the throttle body is connected by a hose to the E.G.R. valve located on the intake manifold.

The E.G.R. valve remains closed during periods of engine idle and deceleration to prevent rough idle, which could be caused from excessive exhaust gas contamination in the idle air/fuel mixtures.

CANISTER PURGE (Fig. 38)

In that the fuel tank is not vented to atmosphere and fuel vapors are collected in the vapor canister, a purge port is provided in the carburetor throttle body. The purge port leads through passages to a common chamber in the throttle body to a purge tube which connects by a hose to the vapor canister. The purge port consists of a separate timed canister purge.

Timed Bleed Purge

The timed bleed purge port is located in each bore next to the off-idle discharge ports. The timed purge operates during off-idle, part throttle, and wide open throttle operation. This provides a larger purge capacity for the vapor canister and prevents over-rich mixtures from being added to the carburetor metering at any time.

MAIN METERING SYSTEM (Fig. 39)

The main metering system supplies fuel to the engine from off-idle to wide open throttle. The primary bores (two smaller bores) supply air and fuel during this range.

As the primary throttle valves are opened beyond the off-idle range allowing more air to enter the engine intake manifold, air velocity increases in the carburetor venturi to cause the main metering system to operate as follows:

Fuel from the float bowl flows between the main metering rods and jets into the main fuel wells. It passes upward in the main well and is bled with air by an air bleed located at the top of the well. The fuel is further bled air through calibrated air bleeds located near the top of the well in the carburetor bores. The fuel mixture then passes from the main well through the main discharge nozzles into the boost venturi. At the boost venturi, the fuel mixture then combines with the air entering the engine through the carburetor bores. It then passes as a combustible mixture through the intake manifold and on into the engine cylinders.

The main metering system is calibrated by tapered and stepped metering rods operating in metering jets and also through the main well air bleeds.

During cruising speeds and light engine loads, manifold vacuum is high. In this period, the engine will run on leaner mixtures than required during heavy loads.

The primary main metering rods are connected to a vacuum responsive piston which operates against spring tension. Engine manifold vacuum is supplied to a power piston through a vacuum channel. When the vacuum is high, the piston is held downward against spring tension

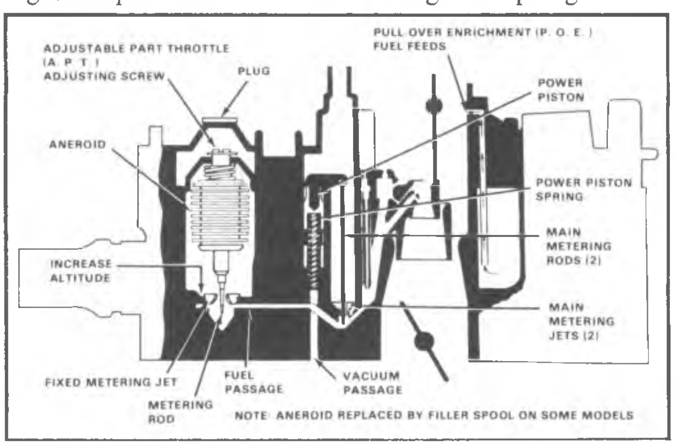


Fig. 39—Main Metering System

and the larger diameter of the metering rod is in the main metering jet orifice. This results in leaner fuel mixtures for economy operation. As engine load increases and engine manifold vacuum drops, spring pressure acting on the power piston overcomes the vacuum pull and gradually lifts the metering rods partially out of the main metering jets. This enrichens the fuel mixture enough to give the desired power to overcome the added load.

Adjustable Part Throttle

An adjustable part throttle (A.P.T.) feature is used in production to maintain very close tolerance of air/fuel mixtures during part throttle operation.

An adjustable metering rod assembly with filler spool, or combination aneroid-metering rod assembly, has been added to the float bowl on the choke housing side of all models. (For an explanation of aneroid, see Altitude Compensation below). The adjustable metering rod, with or without aneroid, provides close tolerance control of fuel flow to the main metering system during the part throttle range.

The A.P.T. adjustment is performed at the factory by turning the threaded metering rod, or the aneroid-metering rod assembly, up or down to position the metering rod in a fixed metering jet located at the bottom of the fuel reservoir in the float bowl. This sets the part throttle air/fuel mixture to the desired flow band.

Altitude Compensation

On M4MCA models, a barometric pressure-sensitive aneroid (sometimes called a "bellows") is included as an integral part of the threaded A.P.T. metering rod assembly. The aneroid, being sensitive to air pressure change (such as altitude), automatically either expands or contracts to lower or raise the metering rod in the fixed metering jet. In this way, the aneroid responds to a change in air pressure to maintain control of part throttle air/fuel ratios.

> NOTE: The position of the A.P.T. metering rod in the fixed jet is extremely critical. Adjustment should NEVER be attempted unless a replacement is required. The threaded A.P.T. metering rod should be readjusted carefully following adjustment procedures provided.

Pull-Over Enrichment (P.O.E.)

A fuel pull-over enrichment (P.O.E.) circuit is used to supply extra fuel at higher engine speeds. The purpose of the supplementary fuel feeds is to allow the use of lean fuel mixtures during part throttle operation and still provide the extra fuel needed at higher engine speeds for good performance.

Two calibrated holes, one in each primary bore, are located just above the choke valve and are supplied fuel from the float bowl. During high carburetor air flows, low pressure created in the air horn bore pulls fuel from the high speed fuel feeds, supplementing fuel flow from the main metering system. The pull-over enrichment system begins to feed fuel at approximately eight pounds of air per minute and continues to feed at higher engine speeds to provide the extra fuel necessary for good engine performance.

POWER SYSTEM (Fig. 40)

The power system provides extra mixture enrichment for heavy acceleration or high speed operation. The richer mixture is supplied through the main metering system in the primary and secondary sides of the carburetor.

The power system located in the primary side consists of a vacuum piston and spring located in a cylinder connected by a passage to intake manifold vacuum. The spring located beneath the vacuum operated power piston tends to push the piston upward against manifold vacuum.

In part throttle and cruising ranges, manifold vacuums are sufficient to hold the power piston down against spring tension so that the larger diameter of the metering rod is held in the main metering jet orifice. Mixture enrichment is not necessary at this point. However, as engine load is increased to a point where extra fuel enrichment is required, the spring tension overcomes the vacuum pull on the power piston and the tapered primary metering rod moves upward in the main metering jet orifice. The smaller diameter of the metering rod allows more fuel to pass through the main metering jet and enrich the mixture flowing into the primary main wells and out the main discharge nozzles.

As the engine speed increases, the primary side of the carburetor can no longer meet the engine air and fuel requirements. To meet these demands, the secondary side of the carburetor is used.

As the secondary throttle valves are opened, engine manifold vacuum (low pressure) is applied directly beneath the air valves. Atmospheric pressure on top of the air valves forces the air valves to open against spring tension and allows metered air to pass through the secondary bores of the carburetor.

When the secondary throttle valves begin to open, the accelerating well ports are exposed to manifold vacuum.

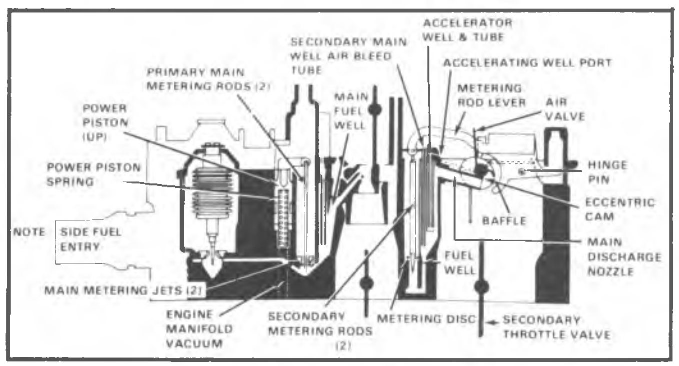


Fig. 40—Power System

The ports immediately start to feed fuel from the accelerating wells and continue to feed fuel until the fuel in the well is gone. This prevents a momentary leanness as the air valve opens and before the secondary nozzles begin to feed fuel.

As the air valves open, a plastic eccentric cam attached to the center of the air valve shaft rotates and, through the metering rod lever, lifts the secondary metering rods out of the secondary orifice plates. The fuel mixture travels from the main wells through the secondary discharge nozzles where it sprays into the secondary bores supplementing the air/fuel mixture delivered from the primary bores. In this way, correct air/fuel mixtures through the secondary bores are controlled by the position of the metering rods in the orifice plates.

There are other features incorporated in the secondary metering system as follows:

1. The main well bleed tubes textend below the fuel level in the main well. These bleed air into the fuel in the well to quickly emulsify the fuel with air for good atomization as it leaves the secondary discharge nozzles.
2. Two baffle plates are used, one in each secondary bore. They extend up and around the secondary fuel discharge nozzles. Their purpose is to provide good fuel distribution at lower air flows by preventing too much fuel from going to the front of the engine. As mentioned earlier, a baffle is added on the underneath side of the air valve on some applications to aid in good mixture distribution from the secondary side of the carburetor.

AIR VALVE DASHPOT (Fig. 41)

The air valve dashpot operates off of the front choke vacuum break diaphragm unit. The secondary air valve is connected to the vacuum break unit by a rod, to control the opening rate of the air valve. This delays the air valve opening rate to prevent secondary discharge nozzle "lag".

Whenever manifold vacuum is above approximately 5" to 6" Hg., the vacuum break diaphragm is seated (plunger is fully inward) against spring tension. At this point, the vacuum break rod is in the forward end of the slot in the air valve lever and the air valves are closed.

During acceleration or heavy engine loads, when the secondary throttle valves are open, the manifold vacuum drops. The spring located in the vacuum break diaphragm overcomes the vacuum pull and forces the plunger and link outward which, in turn, allows the air valves to open. The opening rate of the air valves is controlled by the calibrated restriction in the vacuum inlet nipple in the diaphragm cover. This gives the dashpot action required to delay air valve opening enough for efficient fuel flow from the secondary discharge nozzles.

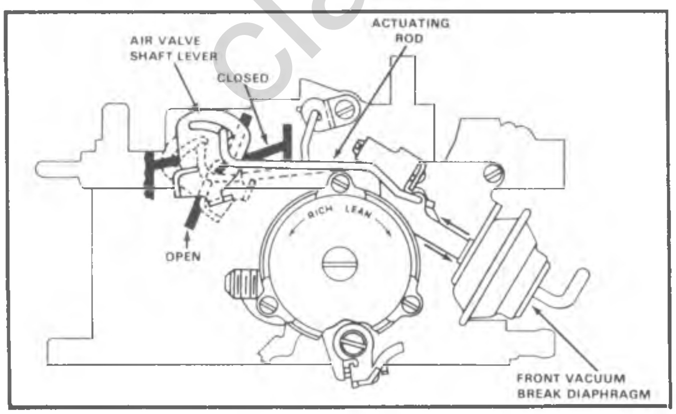


Fig. 41—Air Valve Dashpot

ACCELERATING PUMP SYSTEM (Fig. 42)

During quick acceleration when the throttle is opened rapidly, the air flow and manifold vacuum change almost instantaneously. The fuel, which is heavier, tends to lag behind causing a momentary leanness. The accelerator pump is used to provide the extra fuel necessary for smooth operation during this time.

The accelerating pump system consists of a spring loaded pump plunger and pump return spring, operating in a fuel well. The pump plunger is operated by a pump lever on the air horn which is connected directly to the throttle lever by a pump rod.

When the pump plunger moves upward in the pump well, as happens during throttle closing, fuel from the float bowl enters the pump well through a slot in the well. It flows past the synthetic pump cup seal into the bottom of the pump well. The pump cup is the floating type. (The cup moves up and down on the pump plunger head - see inset). When the pump plunger is moved upward, the flat on the top of the cup unseats from the flat on the plunger head and allows free movement of fuel through the inside of the cup into the bottom of the pump well. This also vents any vapors which may be in the bottom of the pump well so that a solid charge of fuel can be maintained in the fuel well beneath the plunger head.

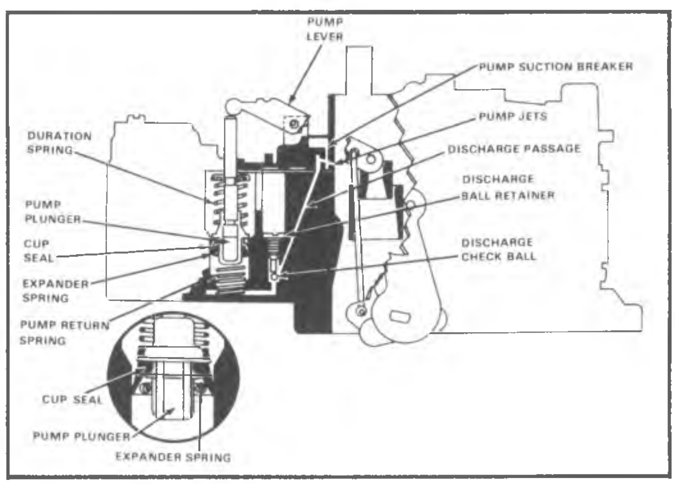


Fig. 42—Accelerating Pump System

When the throttle valves are opened, the connecting linkage forces the pump plunger downward. The pump cup seats instantly and fuel is forced through the pump discharge passage where it unseats the pump discharge check ball and passes on through the passage to the pump jets, located in the air horn, where the fuel sprays into the venturi of each bore.

An expander (garter) spring, located beneath the pump plunger cup, is used to assist in maintaining constant pump cup to pump well contact for good pump fuel delivery.

A metal baffle is installed in the slot in the pump well to prevent fuel slosh into the pump well during severe vehicle maneuvers.

The pump plunger is spring loaded - the upper duration spring is balanced with the bottom pump return spring so that a smooth sustained charge of fuel is delivered during acceleration.

The pump discharge check ball seats in the pump discharge passage during upward motion of the pump plunger so that air will not be drawn into the passage; otherwise, a momentary lag in acceleration could result.

During high speed operation, a vacuum exists at the pump jets. A cavity just beyond the pump jets is vented to the top of the air horn, outside the carburetor bores. This acts as a suction breaker so that when the pump is not in operation, fuel will not be pulled out of the pump jets into the venturi area. This insures a full pump stream when needed and prevents any fuel "pull-over" from the pump discharge passage.

CHOKE SYSTEM (Fig. 43)

The M4MC-M4MCA models have an integral choke housing and thermostatic coil assembly mounted on the carburetor float bowl. Dual vacuum units are used on these models with a special screw adjustment added to front vacuum break unit. In addition, a 2-step fast idle cam is used.

The choke system operates as follows:

The thermostatic coil in the choke housing is calibrated to hold the choke valve closed when the engine is cold. To close the choke valve, depress the accelerator pedal completely to allow the fast idle cam follower lever to clear the steps of the fast idle cam. At this point, tension of the thermostatic coil will rotate the choke valve to the closed position and through rotation of the upper choke lever and movement of the choke rod, the cam follower lever comes to rest on the high step of the fast idle cam. During engine cranking, the closed choke valve restricts air flow through the carburetor bores to provide a richer starting mixture. When the engine starts, manifold vacuum applied to the front vacuum break diaphragm opens the choke valve to a point where the engine will run without loading or stalling lean. When the choke valve moves to the vacuum break position, the fast idle cam follower will drop from the high step on the fast idle cam to the next lower step (second step) when the throttle is opened.

Engine vacuum supplied through an orifice in the choke housing pulls heat from the manifold heat stove into the housing and heat gradually relaxes choke coil tension which allows the choke valve to continue opening through inlet air pressure pushing on the off-set choke valve. As the thermostatic coil warms up, the choke coil lever in the housing moves the choke rod up in the slot in the upper choke lever to open the choke valve further to the near wide open position, while still keeping the cam follower lever on the low step of the fast idle cam. In this way, the fast idle speed is maintained long enough to keep the engine from stalling, yet allows use of a choke coil which lets the choke valve open quickly. As the thermostatic coil warms up to the fully hot position, the choke coil lever allows the fast idle cam to drop down so that the cam follower is completely off the steps of the fast idle cam.

On all models (except 454 V-8), the rear vacuum break diaphragm unit includes a choke closing assist spring. The spring assists in closing the choke valve, along with tension from the thermostatic coil, for improved engine starting. The choke closing assist spring exerts pressure on the vacuum break rod to assist in closing the choke valve during engine starting. When the engine starts and the vacuum break diaphragm seats, the closing spring hits a stop on the plunger stem and no longer exerts pressure on the vacuum break rod.

A clean air purge feature is used in the rear vacuum break unit. A filter element is installed internally, with a small bleed hole located in the end cover of the diaphragm unit. During engine operation, vacuum acting upon the diaphragm unit pulls a small amount of filtered air through the bleed hole to purge the system of any fuel vapors or dirt contaimination which might be pulled into the bleed check valve located inside the diaphragm unit. During adjustment of the rear vacuum break unit, it will be necessary to plug the bleed hole with a piece of tape.

M4MC-M4MCA models for the 454 V-8 engine use the fast idle cam "pull-off" feature.

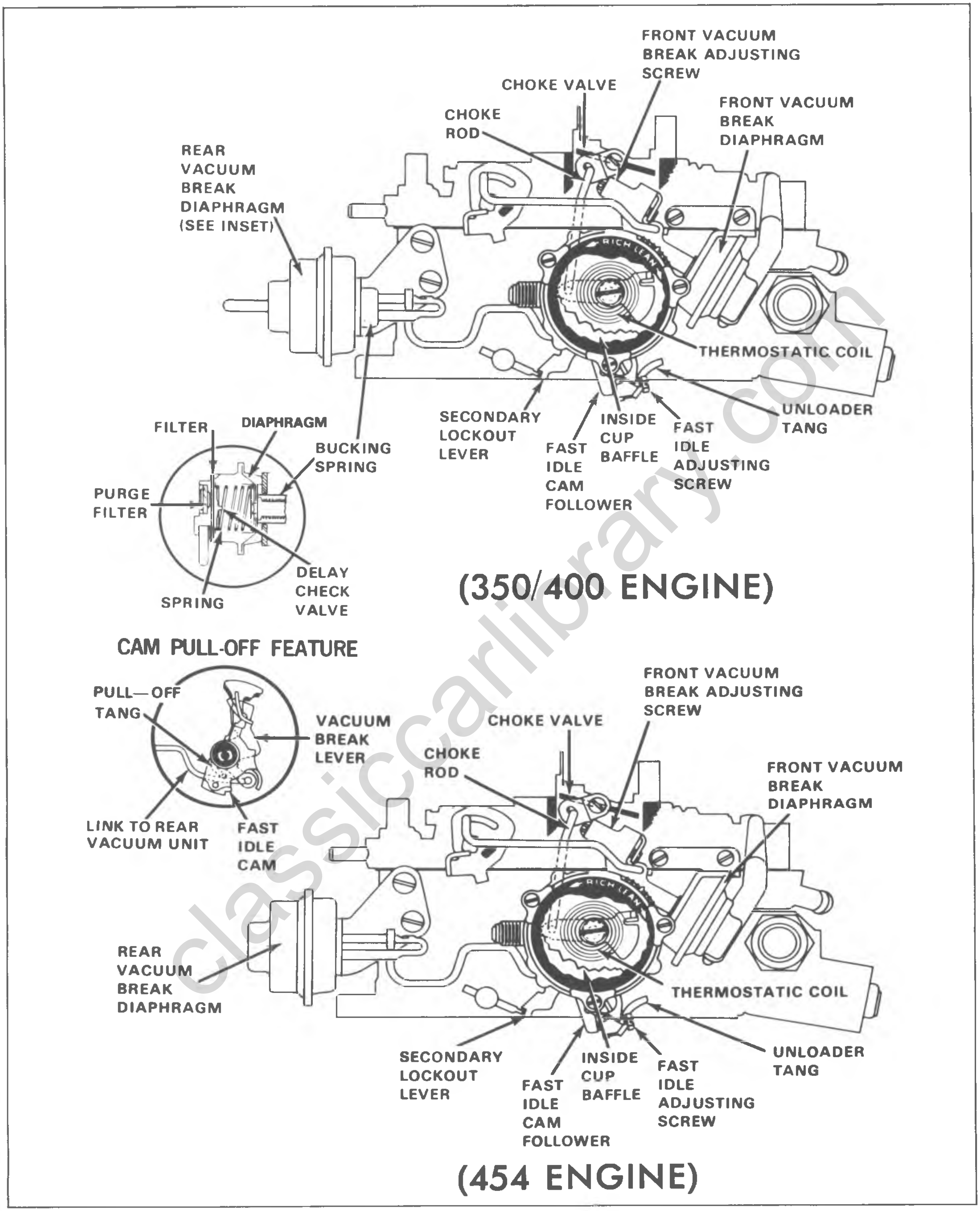


Fig. 43—Choke System

Manifold vacuum to the rear vacuum break diaphragm is controlled by a water temperature switch mounted in the engine cooling jacket near the front of the engine.

During cold operation when manifold vacuum is applied to rear vacuum break diaphragm, vacuum break rod rotates the vacuum break lever to "pull-off" the fast idle cam from the high step to the lower step setting. Thus, the cam "pull-off" feature prevents prolonged high idle speeds during the engine warm-up period.

On all models, the secondary throttle valves are locked out during choke operation and the engine warm-up period. As the thermostatic coil warms up to the fully hot position, the choke coil lever allows the fast idle cam to drop down so that the cam follower is completely off the steps of the fast idle cam. As the fast idle cam drops down, it strikes the secondary throttle valve lock-out lever and pushes it away from the secondary throttle valve lock-out pin. This allows the secondary throttle valves to open for hot engine power requirements.

The choke system is equipped with an unloader feature which is designed to open the choke valve partially, should the engine become flooded or loaded. To unload the engine, the accelerator pedal must be depressed so that the throttle valves are held wide open. A tang on the lever on the choke side of the throttle shaft contacts the fast idle cam and through the intermediate choke shaft forces the choke valve slightly open. This allows extra air to enter the carburetor bores and pass on into the engine manifold to lean out the fuel mixture so that the engine will start.

As mentioned, an adjustment screw has been added to the front vacuum break diaphragm plunger stem and a change in vacuum break adjustment procedure is required on all models.

MAINTENANCE AND ADJUSTMENT

INDEX

IDLE SPEED

Two idle speeds are required and are controlled and adjustable by the idle stop solenoid. The purpose of two idle speeds is to prevent dieseling when ignition is turned off.

One speed is Curb Idle Speed which is normal engine idle and solenoid is energized. Where solenoid is used, the second speed is Low Idle Speed and when solenoid is de-energized the carburetor throttle plate closes further than at normal engine idle.

LOW IDLE AND CURB IDLE SPEED ADJUSTMENT

Refer to Vehicle Emission Control Information label on vehicle for latest certified specification information which may differ from specifications in manual.

1. With engine at normal operating temperature, air cleaner on, choke open, and air conditioning OFF, connect a tachometer to engine.
2. Set parking brake and block drive wheels.
3. Disconnect fuel tank hose from vapor canister.
4. Disconnect vacuum advance hose at distributor and plug hose.
5. Start engine, check timing and adjust as required. Connect vacuum advance hose.
6. Disconnect electrical connector at idle stop solenoid.
7. With automatic transmission in Drive or manual transmission in Neutral, turn low idle screw to obtain low idle speed at specified rpm.
8. Reconnect electrical connector to solenoid and crack throttle slightly, to extend solenoid plunger.
9. Turn solenoid plunger screw in or out to set curb idle speed to specified rpm.
10. Shut off engine and remove tachometer.
11. If vehicle is equipped with air-conditioning, reset idle speed to specification with air-conditioning ON. (350 and 400 cubic inch with heavy duty emission systems only).
12. Connect fuel tank hose to vapor canister.

IDLE MIXTURE

The idle mixture is factory preset and idle mixture screws are capped with plastic limiter caps. The cap permits screw to be turned about one turn leaner (clockwise) without breaking cap. The idle mixture is set to achieve the smoothest idle while maintaining emission levels within standards prescribed by Federal Law.

At major carburetor overhaul the idle mixture may be adjusted. Before suspecting idle mixture as cause of poor idle quality, check ignition system, distributor, dwell and timing, air cleaner, PCV system, evaporation emission control and compression pressures. Also check all vacuum hoses and connections for leaks and check torques of carburetor attachment bolts. Adjustment is made using a tachometer.

Refer to Vehicle Emission Control Information label on vehicle for latest certified specification information which may differ from specifications in manual.

Idle Mixture Adjustment

1. With engine at normal operating temperature, air cleaner on, choke open, and air conditioning OFF, connect a tachometer to engine.
2. Set parking brake and block drive wheels.
3. Disconnect fuel tank hose from vapor canister.
4. Disconnect vacuum advance hose at distributor and plug hose.
5. Start engine, check timing and adjust as required. Connect vacuum advance hose.
6. With engine at normal operating temperature (not hot), air conditioning off, and air cleaner installed, position transmission selector in drive (automatic transmission) or neutral (manual transmission).
7. Break off tab on mixture cap using needle nose pliers.
8. Adjust idle rpm to the higher of the two idle speeds specified. (Example 650/600).
9. Equally enrich (turn out) mixture screws until maximum idle speed is achieved. Reset speed if necessary to the higher specified idle speed.
10. Equally lean (turn in) mixture screws until the lower specified idle speed is achieved (Example 650/600).
11. Connect fuel tank vent hose.

PUMP ROD ADJUSTMENT (Fig. 44)

1. With fast idle cam follower off steps of fast idle cam, back out carburetor idle speed screw until the throttle valves are completely closed in bore.

   NOTE: Be sure secondary actuating rod is not keeping the primary throttle valves from closing. If the primary throttle valves do not completely close, bend the secondary closing tang out of position closing tang out of position and then readjust after pump adjustment.

2. Place pump rod in specified hose in lever.
3. Gauge from top of choke valve wall, next to vent stack, to top of pump stem.

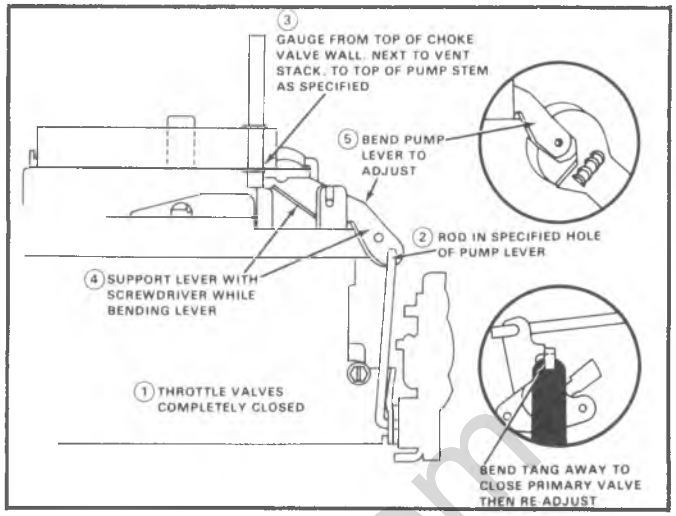


Fig. 44—Pump Rod Adjustment

4. To adjust, support pump lever with screwdriver and bend pump lever.
5. Adjust idle speed.

FAST IDLE ADJUSTMENT (Fig. 45)(Bench)

1. Hold cam follower lever on highest step of fast idle cam.
2. Turn fast idle screw out until primary throttle valves are closed.
3. Turn fast idle screw in to contact lever, then turn screw in specified number of turns to adjust.
4. Recheck fast idle speed on the car setting to specifications listed on the underhood tune-up label.

CHOKE COIL LEVER ADJUSTMENT (Fig. 46)

1. Loosen three retaining screws and remove the thermostatic cover and coil assembly from choke housing.
2. Push up on thermostatic coil tang (counterclockwise) until choke valve is closed.

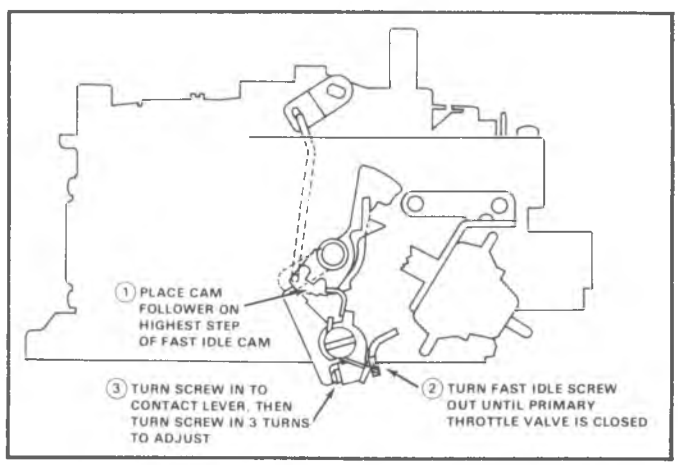


Fig. 45—Fast Idle Adjustment

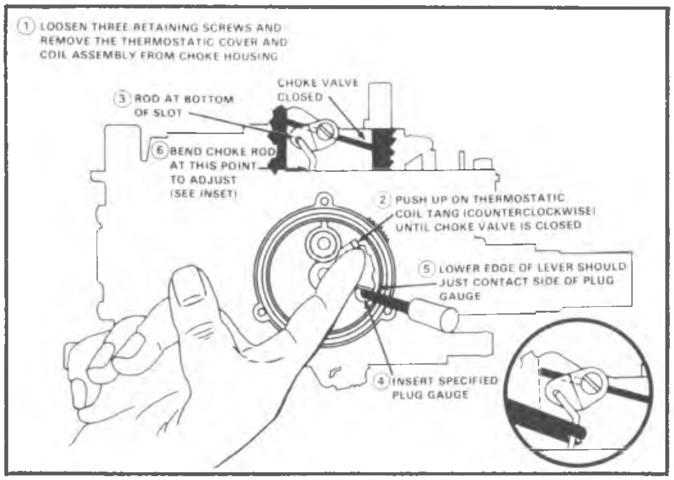


Fig. 46—Choke Coil Lever Adjustment

3. Insert specified plug gauge in hole in choke housing.
4. Lower ege of choke coil lever should just contact side of plug gauge.
5. Bend choke rod at point shown to adjust (see inset).

FAST IDLE CAM (CHOKE ROD) ADJUSTMENT (Fig. 47)

1. Make fast idle adjustments.
2. Place can follower lever on second step of fast idle cam held firmly against rise of high step.
3. Close choke valve by pushing upward on choke coil lever inside choke housing.
4. Gauge between upper edge of choke valve and inside air horn wall.
5. Bend tang on fast idle cam to adjust. Make sure tang lays against cam after bending.
6. Recheck fast idle adjustment on the car, setting to specifications listed on the underhood tune-up label.

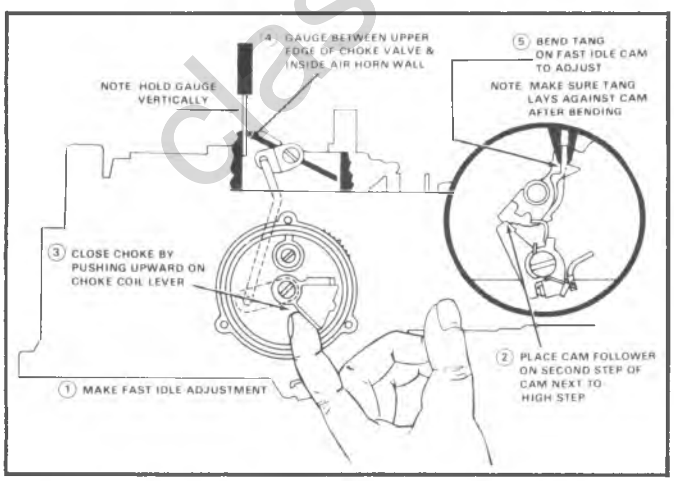


Fig. 47—Fast Idle Cam (Choke Rod) Adjustment

AIR VALVE DASHPOT ADJUSTMENT (Fig. 48)

1. Seat front vacuum break diaphragm using outside vacuum source.
2. Air valves must be closed completely.
3. Place specified gauge between air valve dashpot and end of slot in air valve lever.
4. Bend air valve dashpot rod at point shown if necessary to adjust.

FRONT VACUUM BREAK ADJUSTMENT (Fig. 49)

1. Loosen three retaining screws and remove thermostatic cover and coil assembly from choke housing.
2. Place cam follower lever on highest step of fast idle cam.
3. Seat the front vacuum diaphragm using an outside vacuum source.
4. Push up on inside choke coil lever until tang on vacuum break lever contacts tang on vacuum break plunger.

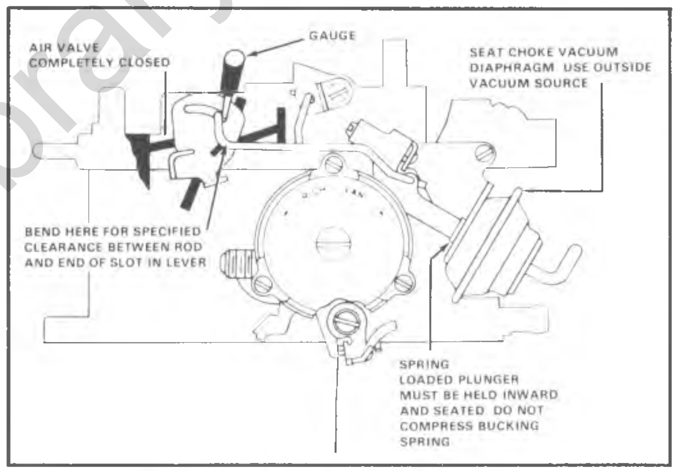


Fig. 48—Air Valve Dashpot Adjustment

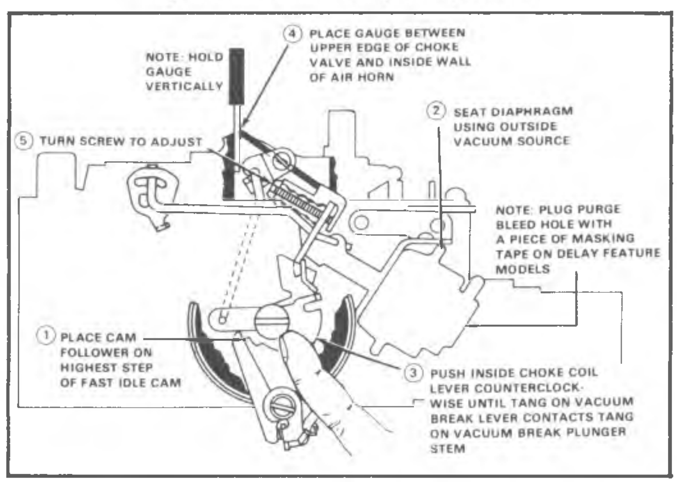


Fig. 49—Front Vacuum Break Adjustment

5. Place gauge between upper edge of choke valve and inside air horn wall. Dimension should be as specified.
6. To obtain correct specification, turn the adjustment screw on the vacuum break plunger lever.
7. After adjustment, install vacuum hose to vacuum break unit.

REAR VACUUM BREAK ADJUSTMENT (Fig. 50)

1. Loosen three retaining screws and remove thermostatic cover and coil assembly from choke housing.
2. Place cam follower lever on highest step of fast idle cam.
3. Plug the bleed hose in the end cover of the vacuum break unit using a small piece of tape.
4. Seat the rear vacuum diaphragm using an outside vacuum source.
5. Push up on the choke coil lever inside choke housing toward closed choke.
6. With choke rod in bottom of slot in choke lever, gauge between upper edge of choke valve and air horn wall. Dimension should be as specified.
7. Bend vacuum break rod at point shown if necessary to adjust.
8. After adjustment, remove tape from end cover of vacuum break unit. Install vacuum hose to vacuum break unit.

AUTOMATIC CHOKE COIL ADJUSTMENT (Fig. 51)

1. Install choke thermostatic coil and cover assembly with gasket between choke cover and choke housing.

   NOTE: On all models, except 454 V-8, tang on thermostatic coil must be installed in slot in inside choke coil lever pick-up arm.

2. Place fast idle cam follower on the highest step of the fast idle cam.
3. Rotate cover and coil assembly counterclockwise until choke valve just closes.
4. Align index point on cover with specified index point on choke housing.
5. Tighten retaining screws.

UNLOADER ADJUSTMENT (Fig. 52)

1. Install choke thermostatic coil and cover assembly with gasket in choke housing and align index mark on cover with specified point on housing (see Automatic Choke Coil Adjustment, Figure 51).
2. With choke valve completely closed, hold throttle valves wide open.

   NOTE: On warm engine, close choke valve by pushing up on tang of intermediate choke lever that contacts fast idle cam. A rubber band may be used for this purpose.

3. Gauge between upper edge of choke valve and air horn wall.
4. Bend tang on fast idle lever as shown to adjust.

   CAUTION: *Check to be sure tang on fast idle lever is contacting center point of fast idle cam after adjustment.*

SECONDARY THROTTLE VALVE LOCK-OUT ADJUSTMENT (Fig. 53)

Secondary Lock-Out Lever Clearance

1. Hold choke valve and secondary throttle valves closed.
2. Using specified plug gauge, measure clearance between lock-out pin and lock-out lever as shown.
3. If necessary, bend lock-out pin at point shown to obtain specified clearance.

Opening Clearance

4. Hold choke valve wide open by pushing down on tail of fast idle cam.
5. Hold secondary throttle valves slightly open.
6. Using specified plug gauge, measure clearance between end of lock-out pin and toe of lock-out lever as shown.
7. If necessary, file off end of lock-out pin to obtain specified clearance.

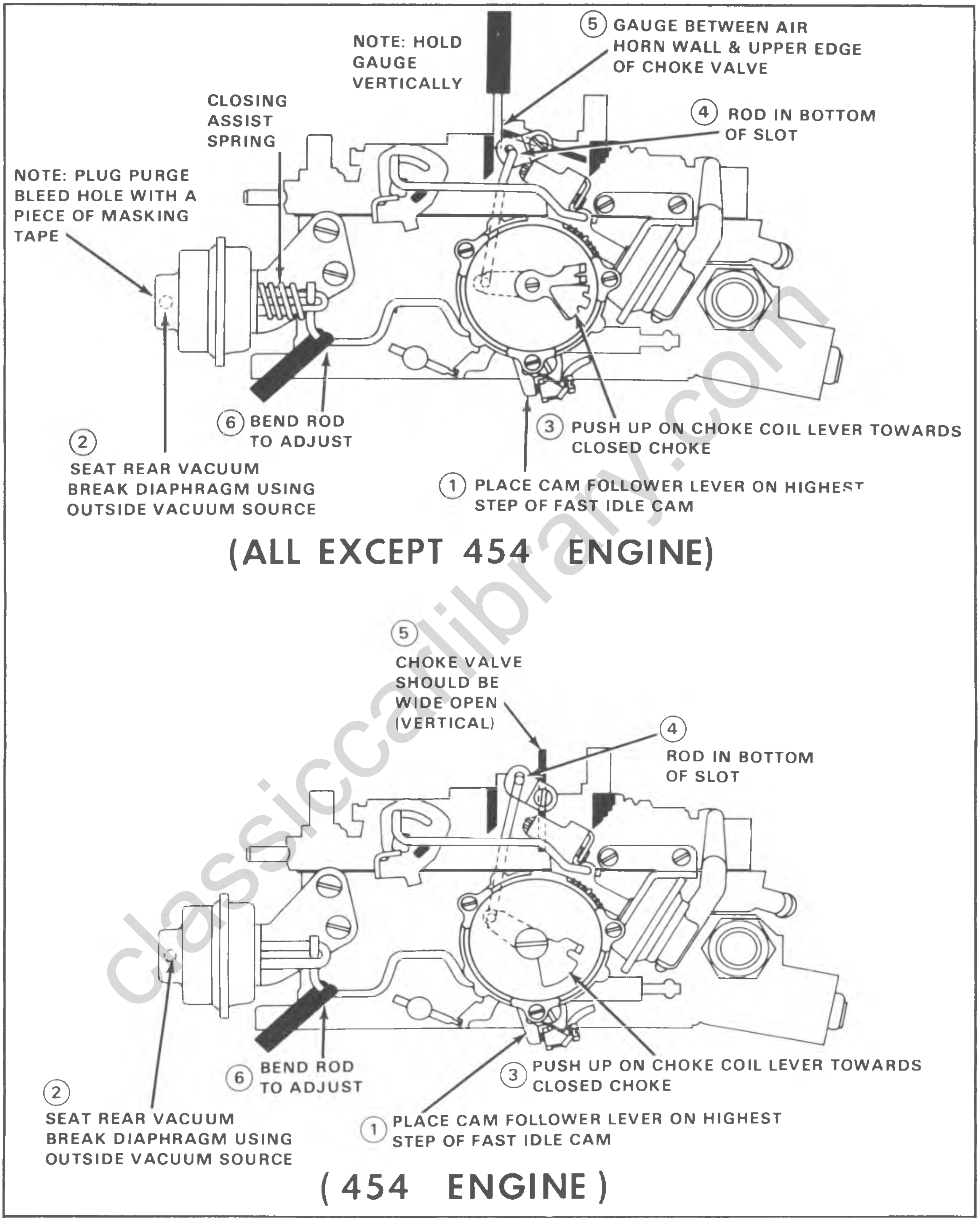


Fig. 50—Rear Vacuum Break Adjustment

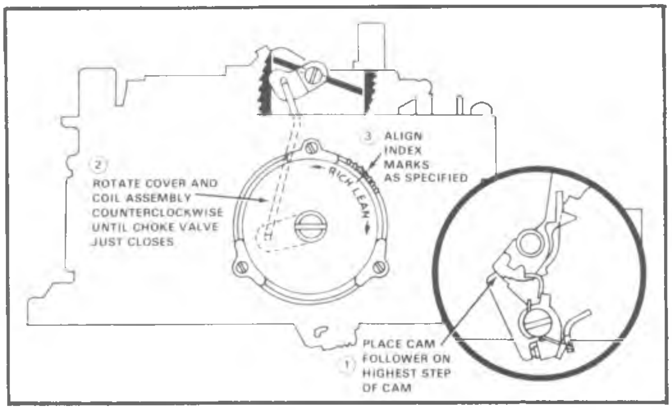


Fig. 51—Automatic Choke Coil Adjustment

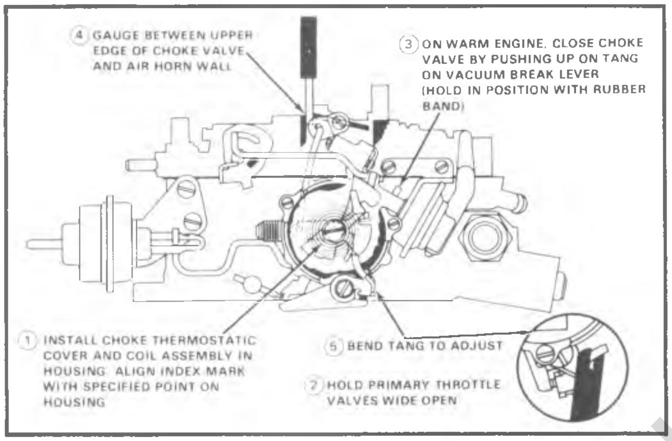


Fig. 52—Unloader Adjustment

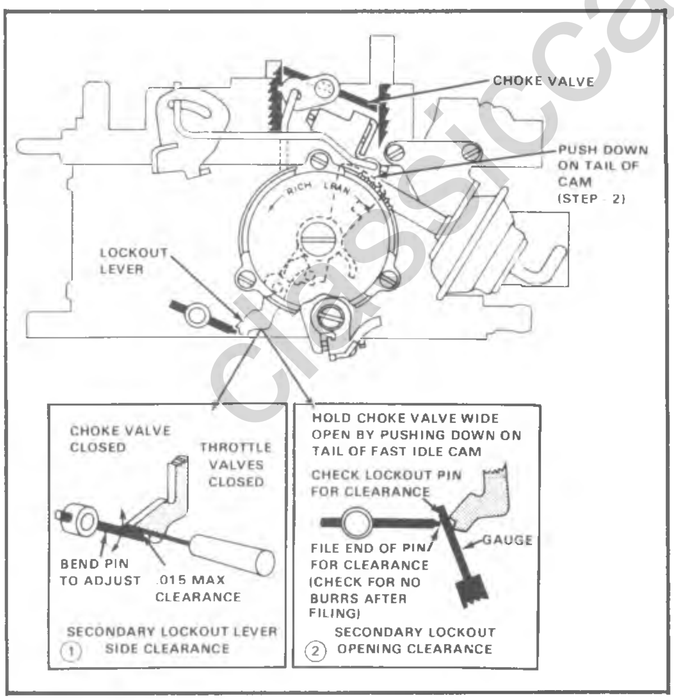


Fig. 53—Secondary Throttle Valve Lock-Out Adjustment

SECONDARY CLOSING ADJUSTMENT (Fig. 54)

1. Pre-set carburetor speed screw to specifications.
2. Hold choke valve wide open with cam follower lever off steps of fast idle cam.
3. Using specified gauge, measure clearance between slot in secondary throttle valve pick up lever and secondary actuating rod.
4. Bend secondary closing tang on primary throttle lever as shown to adjust.

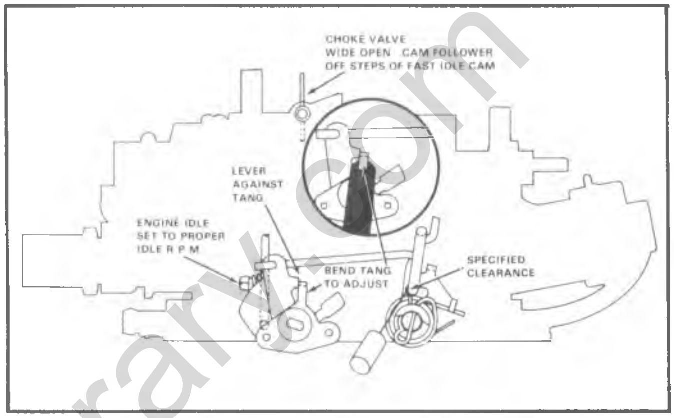


Fig. 54—Secondary Closing Adjustment

SECONDARY OPENING ADJUSTMENT (Fig. 55)

1. Lightly open primary throttle lever until link just contacts tang on secondary lever.
2. With link against tang, the link should be in center of slot in the secondary lever.
3. Bend tang on secondary lever, as shown, if necessary to adjust.

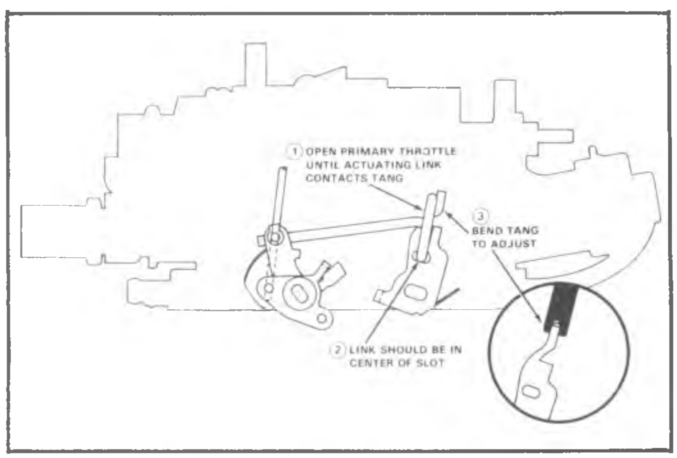


Fig. 55—Secondary Opening Adjustment

AIR VALVE SPRING WIND-UP ADJUSTMENT (Fig. 56)

1. Remove front vacuum break diaphragm unit and air valve dashpot rod.
2. Loosen lock screw using special hex wrench.
3. Turn tension adjusting screw counterclockwise until air valve opens part way.
4. Turn tension adjusting screw clockwise while tapping lightly on casting with handle of a screwdriver.
5. When air valve just closes, turn tension adjusting screw clockwise specified number of turns after spring contacts pin.
6. Tighten lockscrew and replace air valve dashpot rod and front vacuum break diaphragm unit and bracket.

DECELERATION THROTTLE STOP ADJUSTMENT (Fig. 57)

1. Adjust carburetor idle speed screw to specifications.
2. Push hex end of throttle stop plunger in (toward throttle lever) until plunger stem hits stop inside diaphragm unit.
3. With plunger held inward against stop, turn plunger adjusting screw in or out to obtain specified decel R.P.M.

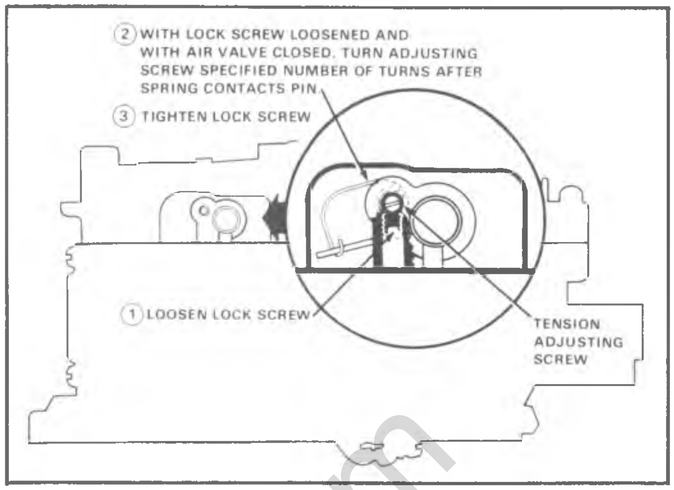


Fig. 56—Air Valve Spring Wind-Up Adjustment

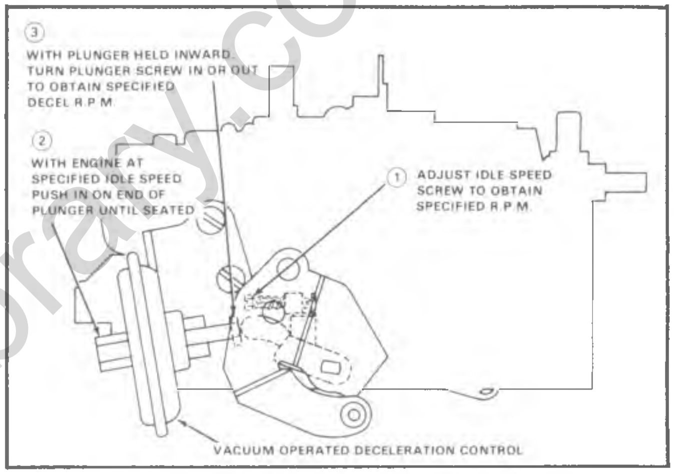


Fig. 57—Deceleration Throttle Stop Adjustment

SERVICE OPERATIONS

INDEX

CARBURETOR REPLACEMENT (Fig. 58)

Removal

Flooding, stumble on acceleration and other performance complaints are, in many instances, caused by presence of dirt, water, or other foreign matter in carburetor. To aid in diagnosis, carburetor should be carefully removed from engine without draining fuel from bowl. Contents of fuel bowl may then be examined for contamination as carburetor is disassembled. Check filter.

1. Remove air cleaner and gasket.
2. Disconnect fuel and vacuum lines from carburetor.
3. Disconnect fresh air hose and choke hose from choke system.
4. Disconnect accelerator linkage.
5. If equipped with automatic downshift cable, disconnect cable.
6. Remove carburetor attaching bolts and remove carburetor.
7. Remove insulator.

Installation

It is good shop practice to fill carburetor bowl with a small amount of unleaded fuel before installing carburetor. This reduces strain of starting motor and battery and reduce the possibility of backfiring while attempting to start engine. The carburetor float and intake needle and seat can also be checked. Operate throttle lever several times and check discharge from pump jets before installing carburetor.

1. Clean throttle body and intake manifold sealing surfaces.

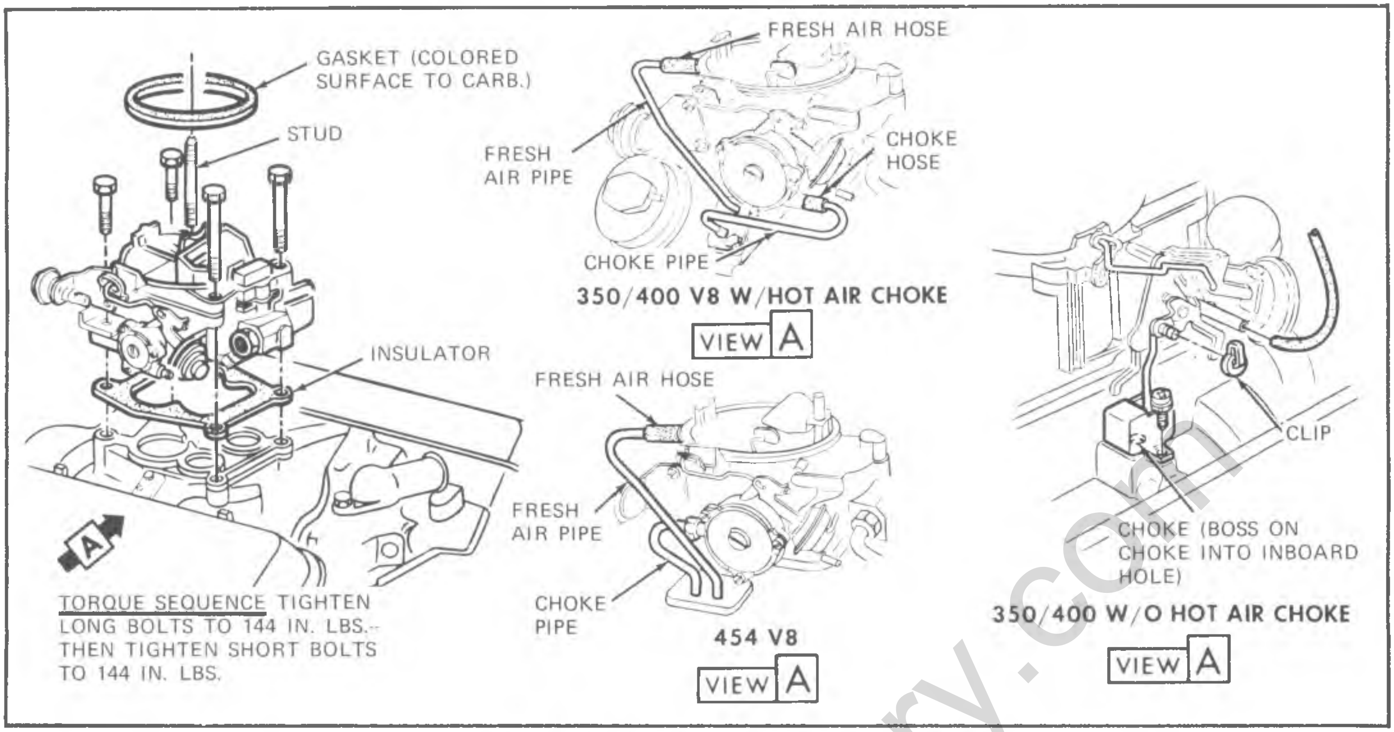


Fig.—58 · Carburetor and Choke Pipes · V8, 4 Bbl.

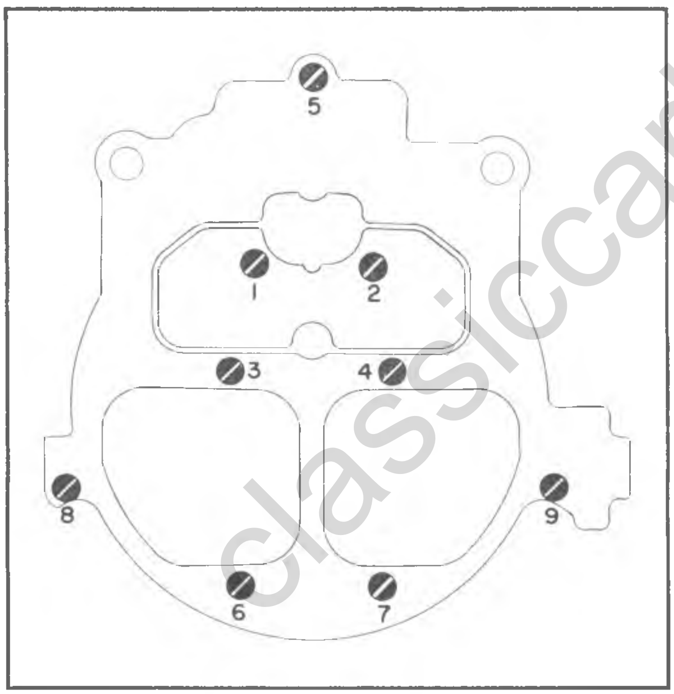


Fig.—59 · Air Horn Tightening Sequence

2. Install new insulator.
3. Position carburetor over intake manifold and install bolts. Tighten long bolts to 144 in. lbs. and then tighten short bolts to 144 in. lbs.
4. Connect downshift cable and adjust as required.
5. Connect accelerator linkage.
6. Connect fresh air hose and choke hose to choke system.
7. Connect fuel and vacuum lines.
8. Install air cleaner.
9. Refer to Maintenance and Adjustment and check idle speed.

FUEL FILTER REPLACEMENT

A plugged fuel filter will restrict fuel flow or bypass foreign material into carburetor and will result in a loss of engine power or rough (pulsating) engine feel, especially at high engine speeds.

1. Disconnect fuel line-connection at inlet fuel filter nut.
2. Remove inlet fuel filter nut from carburetor.
3. Remove filter element and spring.
4. Install element spring and filter element in carburetor.
5. Install new gasket on inlet fitting nut and install nut in carburetor and tighten securely.
6. Install fuel line and tighten connector.

AIR HORN TIGHTENING SEQUENCE

Refer to figure 59 for proper air horn tightening sequence.

DIAGNOSIS

GENERAL

When carburetor troubles are encountered they can usually be diagnosed and corrected with an adjustment as outlined below and under Maintenance and Adjustments.

Before diagnosing the carburetor as the trouble area, check and diagnose the following:

1. Fuel Supply
2. Fuel pump pressure and volume.
3. Plugged fuel filter or fuel lines.
4. Linkage and emission control systems.
5. Engine compression.
6. Ignition system firing voltage.
7. Ignition spark timing.
8. Spark plugs
9. Secure intake manifold.
10. Engine temperature.

Use the following tables to diagnose carburetor.

Problem: ENGINE IDLES ROUGH AND STALLS

Idle speed setting.	Re-set idle speed under maintenance and adjustment.
Manifold vacuum hoses disconnected or improperly installed.	Check all vacuum hoses leading into the manifold or carburetor base for leaks or being disconnected. Install or replace as necessary.
Carburetor loose on intake manifold.	Torque carburetor to manifold bolts.
Intake manifold is loose or gaskets are defective.	Using a pressure oil can, spray light oil or kerosene around manifold legs and carburetor base. If engine RPM changes, tighten or replace the manifold gaskets or carburetor base gaskets as necessary.
Carburetor flooding. NOTE: Also check carburetor flooding when engine cranks (turn over) but will not start or starts hard when cold.	1. Remove air horn and check float adjustments as specified in carburetor overhaul section. 2. If excessive dirt is found in the carburetor, clean the fuel system and carburetor. 3. Replace fuel filters as necessary. 4. Check float needle and seat for proper seal. If a needle and seat tester is not available, mouth suction can be applied to the needle seat with needle installed. If the needle is defective, replace with a factory matched set. 5. Check float for being loaded with fuel, bent float hanger or binds in the float arm. NOTE: A solid float can be checked for fuel absorption by lightly squeezing between fingers. If wetness appears on surface or float feels heavy (check with known good float, replace the float assembly. 6. Check metal float for leakage by shaking.
Dirt in idle channels.	If excessive dirt is found in carburetor or idle channels, clean fuel system and carburetor. Replace fuel filters as necessary.
Poor secondary throttle valve alignment.	If mis-aligned, loosen screws, align valves, tighten screws and re-stake as necessary.

Problem:

ENGINE CRANKS (TURNS OVER) BUT WILL NOT START OR STARTS HARD WHEN COLD.

POSSIBLE CAUSE	CORRECTIVE ACTION
Improper starting procedure used.	Check proper starting procedure, as outlined in the owner's manual.
No fuel in gas tank	Add fuel. Check fuel gauge for proper operation.
Choke valve not closing sufficiently when cold.	Adjust the choke thermostatic coil.
Choke valve or linkage binding or sticking.	Realign the choke valve or linkage as necessary. If caused by dirt and gum, clean with automatic choke cleaner. Do not oil choke linkage. If parts are replaced, check adjustments.
No fuel in carburetor.	1. Remove fuel line at carburetor. Connect hose to fuel line and run into metal container. Remove the high tension coil wire from center tower on distributor cap and ground. Crank over engine – if there is no fuel discharge from the fuel line, check for kinked or bent lines. Disconnect fuel line at tank and blow out with air hose, reconnect line and check again for fuel discharge. If none, replace fuel pump. Check pump for adequate flow, as outlined in service manual. 2. If fuel supply is o.k., check the following: a. Inspect fuel filter. If plugged replace. b. If filter is o.k., remove air horn and check for a bind in the float mechanism or a sticking float needle. If o.k., adjust float as specified in carburetor overhaul section.
Engine Flooded. NOTE: To check for flooding, remove the air cleaner, with the engine off, and look into the carburetor bore. Fuel will be dripping off nozzle and/or the carburetor will be very wet.	Check carburetor unloading procedure. Depress the accelerator to the floor and check the carburetor to determine if the choke valve is opening. If not, adjust unloader, as specified.
Carburetor flooding	NOTE: Before removing the carburetor air horn, use the following procedure which may eliminate the flooding. 1. Remove the fuel line at the carburetor and plug. Crank and run the engine until the fuel bowl runs dry. Turn off the engine and connect fuel line. Then re-start and run engine. This will usually flush dirt past the carburetor float needle and seat. 2. If dirt is in fuel system, clean the system and replace fuel filter as necessary. If excessive dirt is found, remove the carburetor unit. Disassemble and clean. 3. Check float needle and seat for proper seal. If a needle and seat tester is not available, apply mouth suction to the needle seat with needle installed. If the needle is defective, replace with a factory matched set. 4. Check float for being loaded with fuel, bent float hanger or binds in the float arm. NOTE: Check float for fuel absorption by lightly squeezing between fingers. If wetness appears on surface or float feels heavy (Check with known good float), replace the float assembly. 5. Adjust float as specified in carburetor overhaul section.

Problem: ENGINE STARTS AND STALLS

Engine does not have enough fast idle speed when cold.	Check and re-set fast idle cam.
Choke vacuum break unit is not adjusted to specification or unit is defective.	1. Adjust vacuum break to specification. 2. If adjusted O.K., check the vacuum break for proper operation as follows: On the externally mounted vacuum break unit, connect a piece of hose to the nipple on the vacuum break unit and apply suction by mouth or use tool J-23418 to apply vacuum. Plunger should move inward and hold vacuum. If not, replace the unit. NOTE: Always check the fast idle cam adjustment before adjusting vacuum break unit.
Choke coil out of adjustment.	Adjust choke coil rod.
Choke valve and/or linkage sticking or binding.	1. Clean and align choke valve and linkage. Replace if necessary. 2. Re-adjust if part replacement is necessary.
Idle speed setting	Adjust idle speed to specifications on label in engine compartment.
Not enough fuel in carburetor.	1. Check fuel pump pressure and volume. 2. Check for partially plugged fuel inlet filter. Replace if dirty. 3. Remove air horn and check float adjustments as specified in carburetor overhaul section.
Carburetor flooding. NOTE: Also check carburetor flooding when engine cranks (turn over) but will not start or starts hard when cold.	1. Check float needle and seat for proper seal. If a needle and seat tester is not available, mouth suction can be applied to the needle seat with needle installed. If needle is defective, replace with a factory matched set. 2. Check float for being loaded with fuel, bent float hanger or binds in the float arm. NOTE: Check float for fuel absorption by lightly squeezing between fingers. If wetness appears on surface or float feels heavy (check with known good float), replace the float assembly. 3. Check float adjustments as specified in carburetor overhaul section. 4. If excessive dirt is found in the carburetor, clean the fuel system and carburetor. Replace fuel filter as necessary.

Problem: ENGINE RUNS UNEVEN OR SURGES

POSSIBLE CAUSE	CORRECTIVE ACTION
Fuel Restriction	Check all hoses and fuel lines for bends, kinks or leaks. Straighten and secure in position. Check fuel filter. If plugged or dirty - replace.
Dirt or water in fuel system.	Clean fuel tank and lines. Remove and clean carburetor.
Fuel level	Adjust float as specified in carburetor overhaul section. Check for free float and float needle valve operation.
Main metering rod not adjusted to specification.	Remove carburetor air horn and gasket. Adjust metering rod as specified in carburetor overhaul section.
Metering rod bent or incorrect part. Main metering jet defective, loose or incorrect part.	Replace as necessary as specified in carburetor overhaul section.
Power system in carburetor not functioning properly. Power valve sticking in down position.	Free up or replace as necessary.
Vacuum leakage	It is absolutely necessary that all vacuum hoses and gaskets are properly installed, with no air leaks. The carburetor and manifold should be evenly tightened to specified torque.
Secondary throttle valves sticking open or not seating properly.	Loosen secondary throttle valve screws. Align valves in carburetor bores and tighten securely.

Problem: ENGINE HESITATES ON ACCELERATION

Defective accelerator pump system NOTE: A quick check of the pump system can be made as follows. With the engine off, remove air cleaner and look into the carburetor bores and observe pump stream, while briskly opening throttle valve. A full stream of fuel should emit from pump jet and strike near the center of the venturi area.	1. Remove air horn and check pump cup. If cracked, scored or distorted, replace the pump plunger. 2. Check the pump discharge ball for proper seating and location. The pump discharge ball is located in a cavity next to the pump well. To check for proper seating, remove air horn and gasket and fill cavity with fuel. No "leak down" should occur. Restake and replace check ball if leaking. Make sure discharge ball, spring, and retainer are properly installed.
Dirt in pump passages or pump jet.	Clean and Blow out with compressed air.
Fuel level.	Check for sticking float needle or binding float. Free up or replace parts as necessary. Check and reset float level to specification per carburetor overhaul section.
Leaking air horn to float bowl gasket.	Torque air horn to float bowl using proper tightening procedure.
Carburetor loose on manifold.	Torque carburetor to manifold bolts.
Air valve binding (sticks open)	1. Torque air horn screws evenly using proper tightening sequence. 2. Free-up air valve shaft and align air valves. 3. Check air valve spring for closing tension. If defective, replace with spring kit.
Secondary throttle valve lockout.	1. Free-up and check for proper operation. 2. Adjust secondary throttle valve lockout.

Problem: NO POWER ON HEAVY ACCELERATION OR AT HIGH SPEED

POSSIBLE CAUSE	CORRECTIVE ACTION
Carburetor throttle valve not going wide open. (Check by pushing accelerator pedal to floor).	Lubricate throttle linkage to obtain wide open throttle in carburetor.
Dirty or plugged fuel filter.	Replace with a new filter element.
Power system not operating.	Check power piston for free up and down movement. If power piston is sticking check power piston and cavity for dirt, or scores. Check power piston spring for distortion. Clean or replace as necessary.
Metering rod not adjusted to specification.	Adjust metering rod per carburetor overhaul section.
Float level too low.	1. Check and reset float level to specification per carburetor overhal section.
Float not dropping far enough into float bowl.	Check for binding float hanger and for proper float alignment in float bowl.
Main metering jet or metering rod dirty, plugged or incorrect part.	1. If the main metering jets are plugged or dirty and excessive dirt is in the fuel bowl, Carburetor should be completely disassembled and cleaned. 2. Check the jet or rod for being the correct part. Consult the parts list for proper usage. The last two digits stamped on the jet face are the same as the last two digits of the part number.
Air valves binding, stuck closed or wide open.	1. Free-up air valve shaft and align air valves. 2. Torque air horn screws evenly using proper tightening sequence. 3. Check air valve spring for closing tension. If defective, replace with spring kit.

Problem: ENGINE STARTS HARD WHEN HOT

Choke valve not opening completely.	1. Check for binding choke valve and/or linkage. Clean and free-up or replace parts as necessary. Do not oil choke linkage. 2. Check and adjust choke intermediate rod (fig. 29).
Engine flooded - Carburetor flooding.	See procedure under "Engine cranks, will not start".
No fuel in carburetor.	1. Check fuel pump. Run pressure and volume test. 2. Check float needle for sticking in seat, or binding float.
Leaking float bowl.	Fill bowl with fuel and look for leaks.

Problem: POOR FUEL ECONOMY

POSSIBLE CAUSE	CORRECTIVE ACTION
Engine needs complete tune-up.	Check engine compression. Examine spark plugs, (if dirty or improperly gapped, clean and re-gap or replace). Check ignition point dwell, condition, readjust ignition points if necessary and check and reset ignition timing. Clean or replace air cleaner element if dirty. Check for restricted exhaust system and intake manifold for leakage, make sure all vacuum hoses are connected correctly.
Choke valve not fully opening.	1. Clean choke and free up linkage. 2. Check intermediate choke rod for proper adjustment. Reset to specifications (fig. 29).
Fuel leaks.	Check fuel tank, fuel lines and fuel pump for any fuel leakage.
Main metering rod not adjusted to specification.	Remove carburetor air horn and gasket. Adjust metering rod as specified in carburetor overhaul section.
Metering rod bent or incorrect part. Main metering jet defective, loose or incorrect part.	Replace as necessary as specified in carburetor overhaul section.
Power system in carburetor not functioning properly. Power valve sticking in up position.	Free up or replace as necessary in carburetor overhaul section.
High fuel level in carburetor or carburetor flooding.	1. Check for dirt in the needle and seat. Test using suction by mouth or needle seat tester. If defective, replace needle and seat assembly with factory matched set. 2. Check for loaded float. 3. Re-set carburetor float as specified in carburetor overhaul section. 4. If excessive dirt is present in the carburetor bowl, the carburetor should be cleaned.
Fuel being pulled from accelerator system into venturi through pump jet.	Run engine at RPM where nozzle is feeding fuel. Observe pump jet. If fuel is feeding from jet, check pump discharge ball for proper seating by filling cavity above ball with fuel to level of casting. No "leak down" should occur with discharge ball in place. Re-stake or replace leaking check ball, defective spring, or retainer.
Air bleeds or fuel passages in carburetor dirty or plugged.	Clean carburetor or overhaul as necessary.

ACCELERATOR CONTROL

GENERAL

The accelerator control system is cable type. There are no linkage adjustments. A reference between the bottom of accelerator pedal and floor pan should be used only as a check for bent bracket assembly. Check torque references. Check for correct opening and closing positions by operating accelerator pedal and if any binding is present, check routing of cable.

ACCELERATOR CONTROL CABLE

Refer to figures 60, 61 and 62 for removal and installation of accelerator control cable.

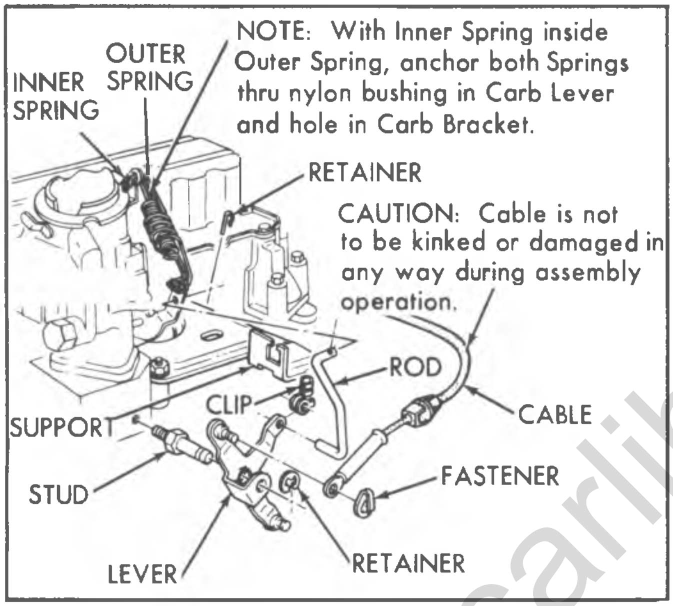


Fig. 60—Accelerator Controls L6-1Bbl.

HAND THROTTLE CONTROL

Refer to figure 63 for hand throttle controls for CK vehicles.

ACCELERATOR PEDAL

Refer to figures 64 through 67 for removal and installation of accelerator pedal.

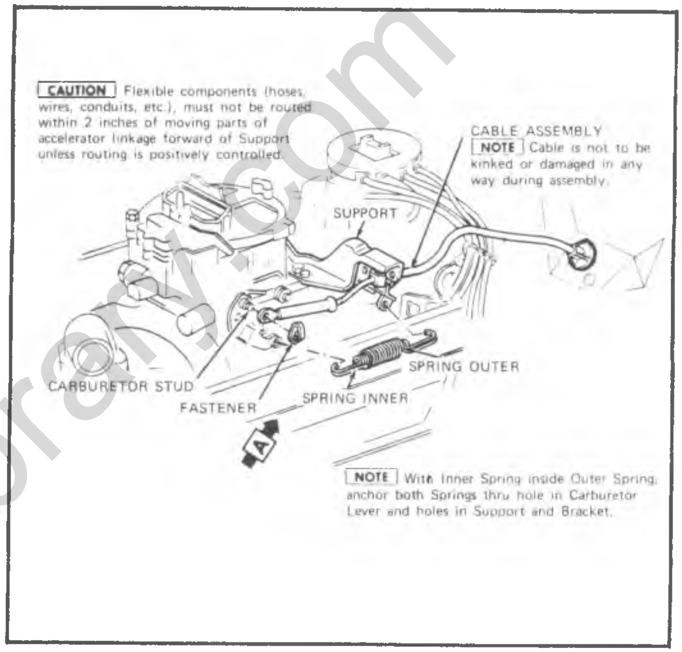


Fig. 62—Accelerator Controls V8-4Bbl

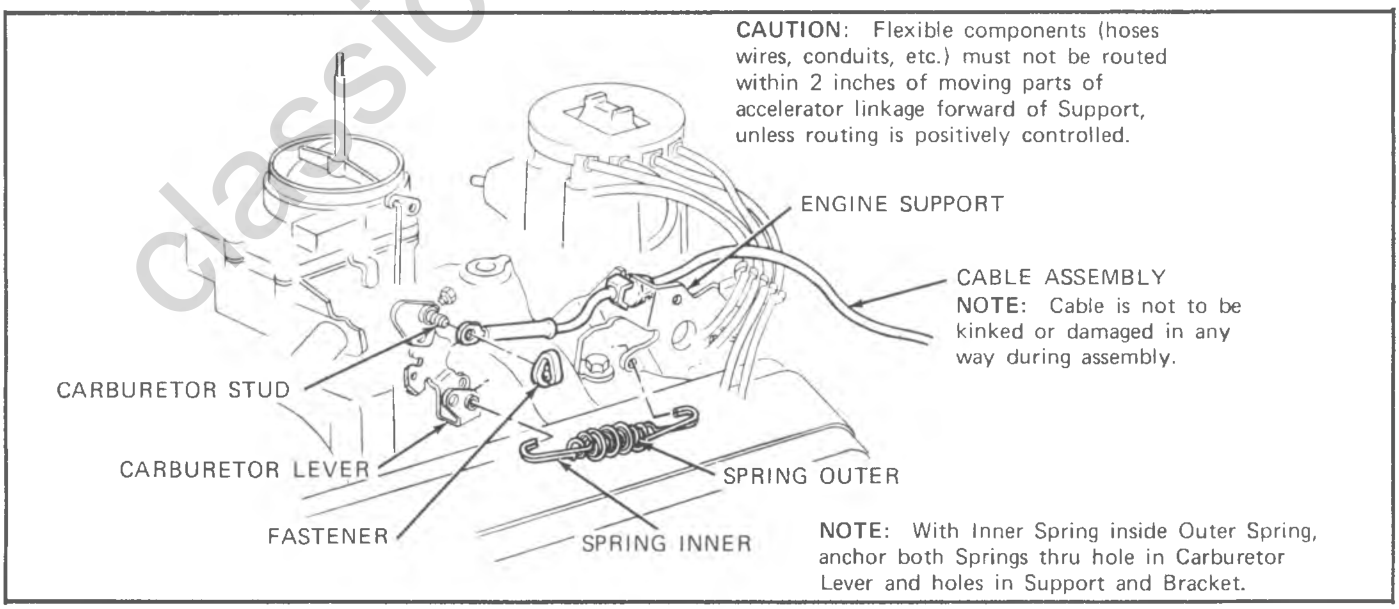


Fig. 61—Accelerator Controls V8-2Bbl

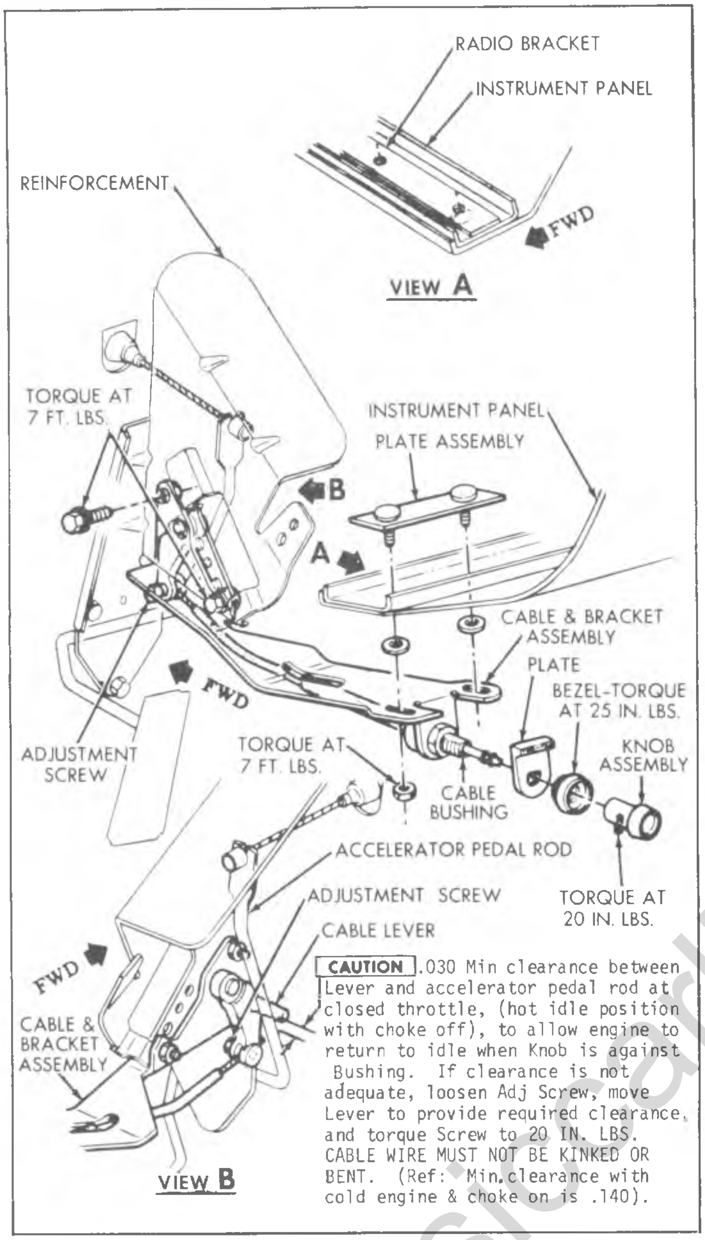


Fig. 63—Hand Throttle Controls-CK

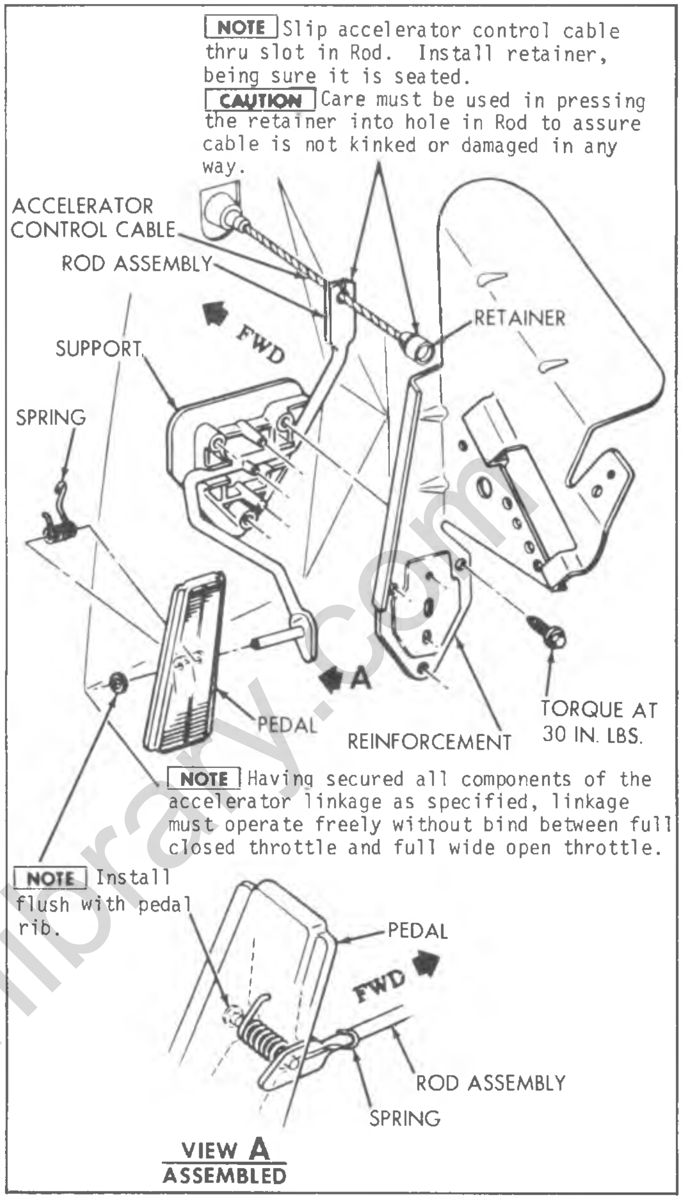


Fig. 64—Accelerator Pedal-CK

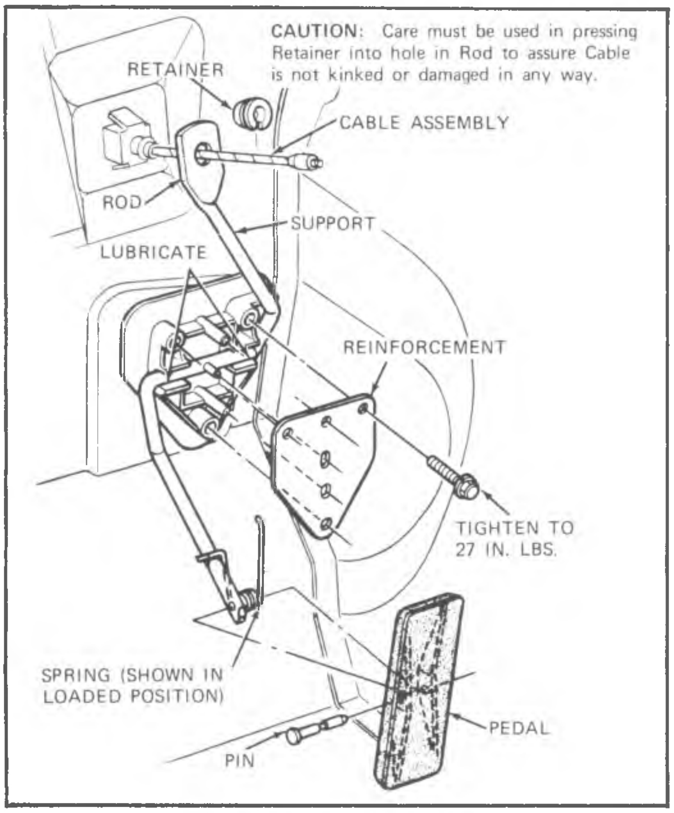


Fig. 65—Accelerator Pedal-G

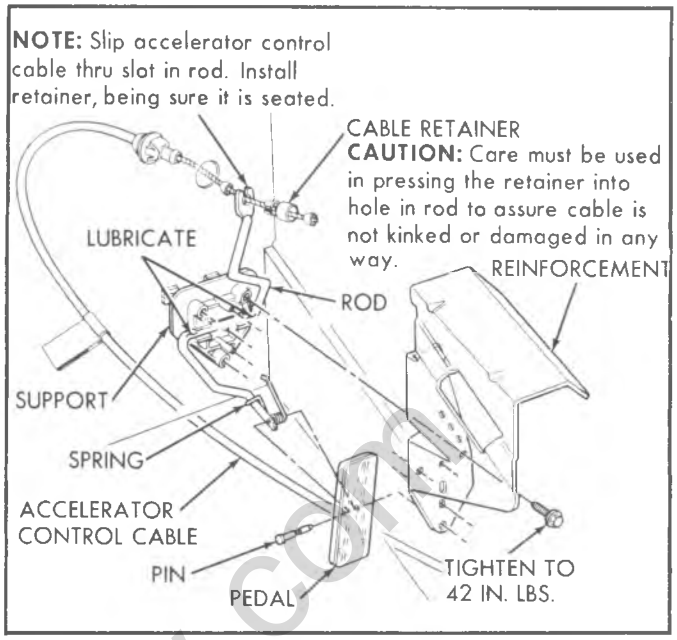


Fig. 66—Accelerator Pedal-P42

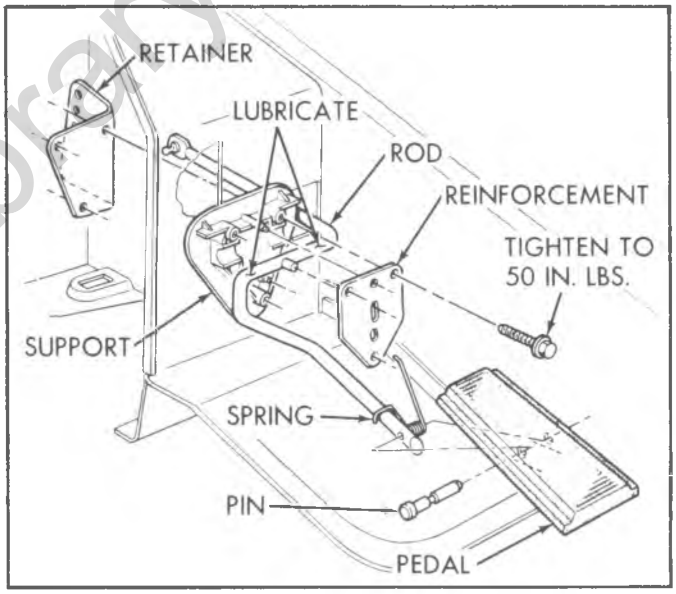


Fig. 67—Accelerator Pedal-P32

AIR CLEANER

GENERAL

Air cleaner operates primarily to remove dust and dirt form the air that is taken into the carburetor and engine. The air cleaner is also effective in reducing engine air inlet noise.

Two types of air cleaner elements are used on trucks, an oil wetted paper element and a polywrap element.

The oil wetted paper element consists of an accordian pleated oiled paper filter supported by wire mesh with a plastisol seat on both top and bottom.

The polywrap element consists of the oil wetted paper element with an additional polyurethane band around it.

The air cleaner has an automatic air inlet temperature control device. Air temperature is automatically controlled by a thermostatic valve which selects warmed air from the heat stove and/or cooler air from the engine compartment or outside air inlet on some vehicles (Fig. 68).

This system is designed to improve carburetor operation and engine warm-up characteristics. It achieves this by keeping the air entering the carburetor at a temperature of at least 100°F or more except at wide open throttle.

The thermostatic air cleaner system includes a temperature sensor, a vacuum motor and control damper assembly mounted in the air cleaner, vacuum control

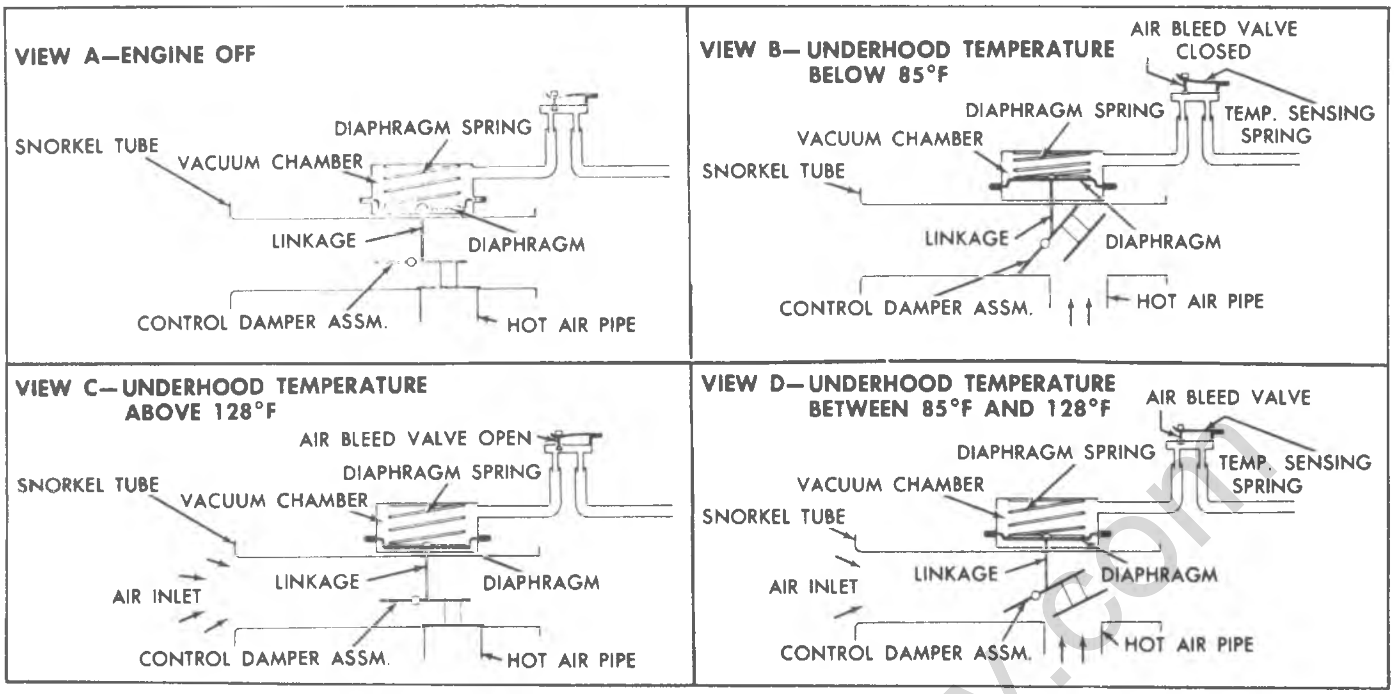


Fig. 68—Air Cleaner Operation

hoses, manifold heat stove and connecting pipes. The vacuum motor is controlled by the temperature sensor. The vacuum motor operates the air control damper assembly to regulate the flow of hot air and under hood air to carburetor. The hot air is obtained from the heat stove on the exhaust manifold.

AIR CLEANER ELEMENT REPLACEMENT

Paper Element

1. Remove air cleaner cover.
2. Remove and discard air cleaner element.
3. Clean bottom section of air cleaner and inspect cover seal for tears or cracks. Replace seal if damaged.
4. Install new element in bottom section of air cleaner with either end up.
5. Install air cleaner cover. Do not over-torque wing nut(s).

Polywrap Element

1. Remove air cleaner cover.
2. Remove element.
3. Remove polywrap band from paper element and discard element (fig. 69).
4. Clean bottom section of air cleaner and inspect cover seal for tears or cracks. Replace seal if damaged.
5. Inspect band for tears and replace if damaged.
6. If band is serviceable, wash in kerosene or mineral spirts and squeeze out excess solvent (fig. 70).

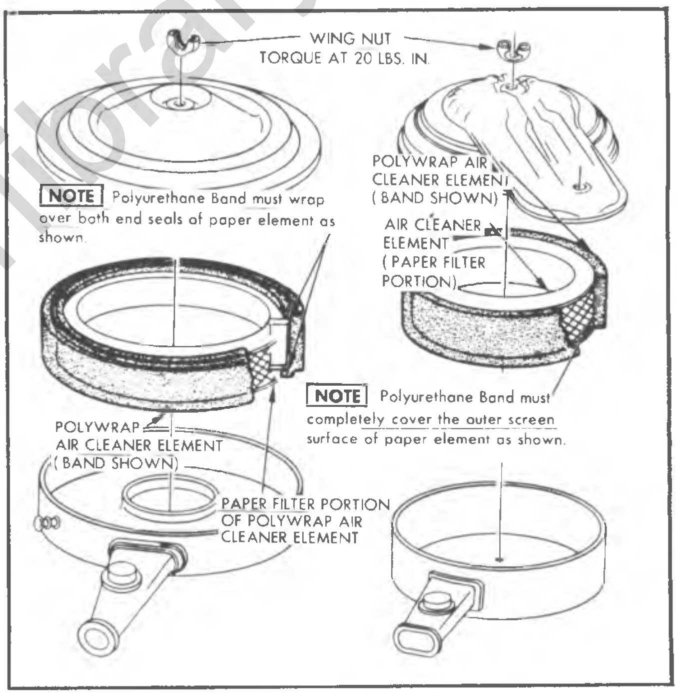


Fig. 69—Polywrap Air Cleaner Element

NOTE: Never use a hot degreaser or any solvent containing acetone or similar solvent; also, never shake, swing or wring the element to remove excess solvent as this may tear the polyurethane material. Instead, "squeeze" the excess solvent from the element.

7. Dip band into light engine oil and squeeze out excess oil.
8. Install band around outer surface of new paper element.

Fig. 70—Cleaning Polywrap Band

9. Install element in bottom section of air cleaner with either end up.
10. Install air cleaner cover. Do not over-torque wing nut(s).

AIR CLEANER

Refer to figure 71 for air cleaner used with in line L6 engine.

Refer to figure 72 for air cleaner used on CK truck with 350/400 V8 engine.

Refer to figure 73 for air cleaner used on G truck with 350/400 V8 engine.

Refer to figure 74 for air cleaner used with 454 V8 engine.

Refer to figure 75 for air cleaner used of P20(42), P30(42) and P30(32) truck with 350 V8 engine and 4MV carburetor.

Inspection

Visual

1. Check for proper, secure connections of heat pipe and hoses.
2. Check for kinked or deteriorated hoses. Repair or replace as required.

Operational

1. Remove air cleaner cover and install temperature gauge (Tool J-22973) as close as possible to sensor (fig. 76).

   Reinstall cover without wing nut. (Temperature must be below 85°F before proceeding.)
2. With the engine "Off", observe damper door position through snorkel opening. Snorkel passage should be open. (fig. 68 view A) If not, check for binds in linkage.
3. Start and idle engine. With air temperature below

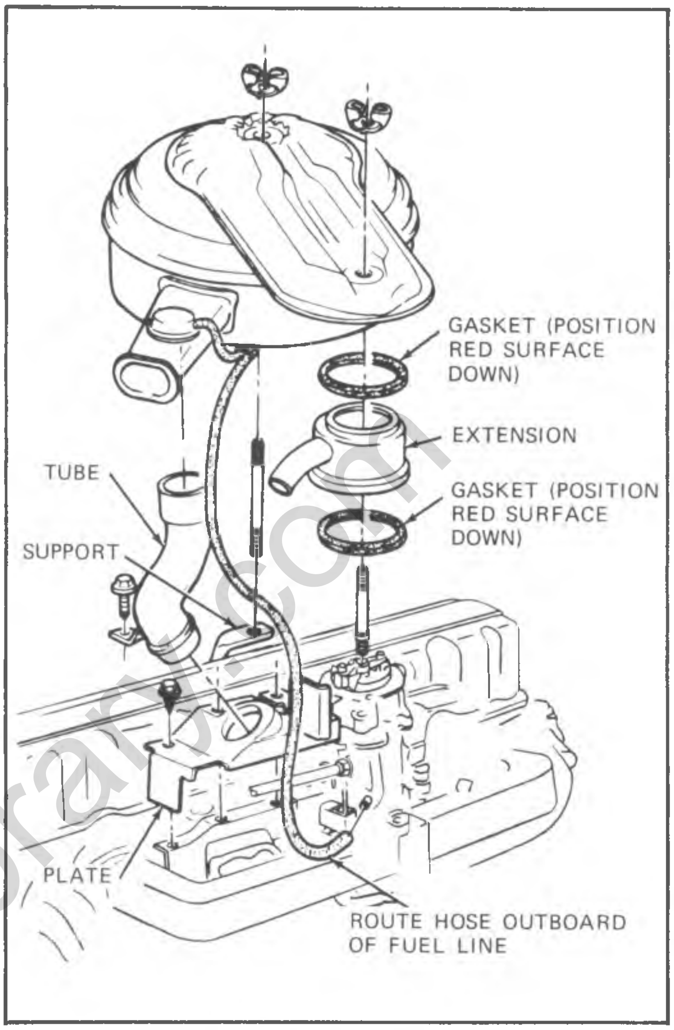


Fig. 71—Air Cleaner-L6

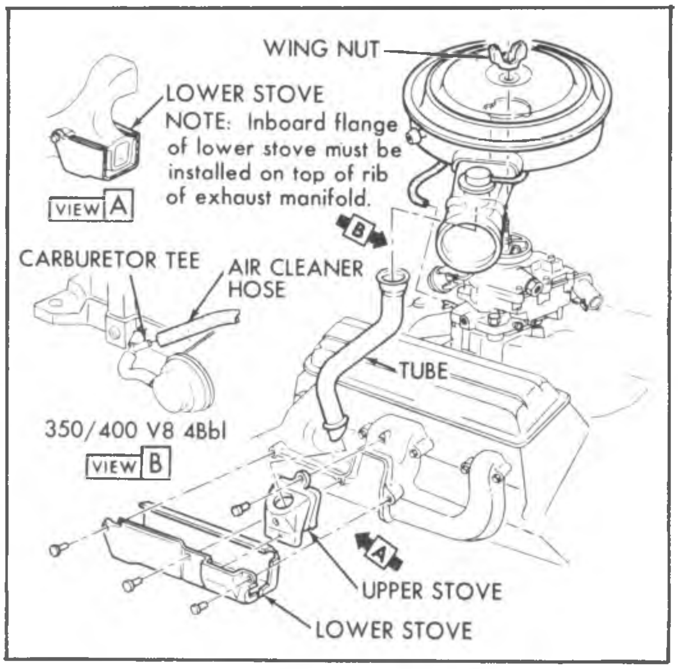


Fig. 72—Air Cleaner-350/400 V8-CK

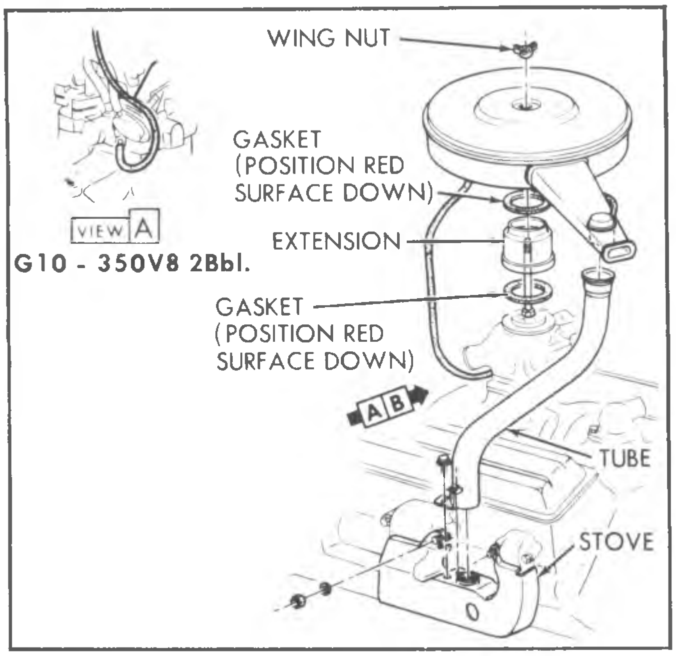


Fig. 73—Air Cleaner 350/400 V8-G

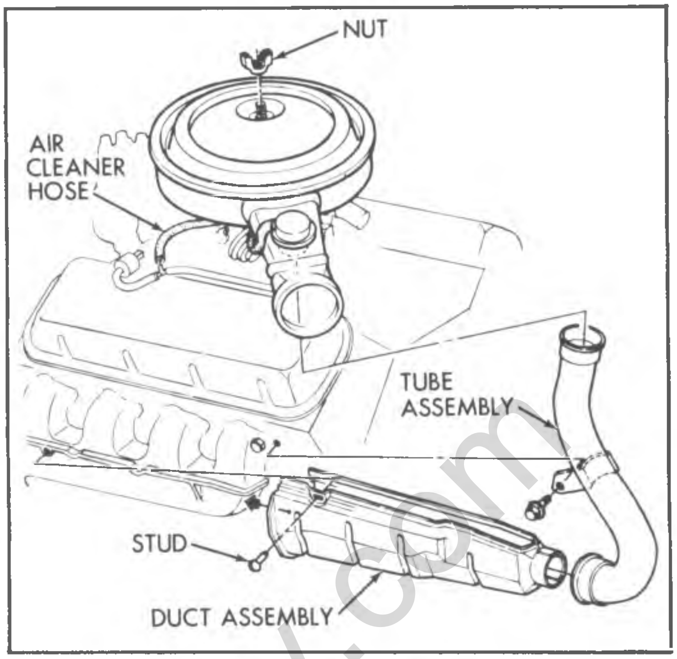


Fig. 74—Air Cleaner-454 V8

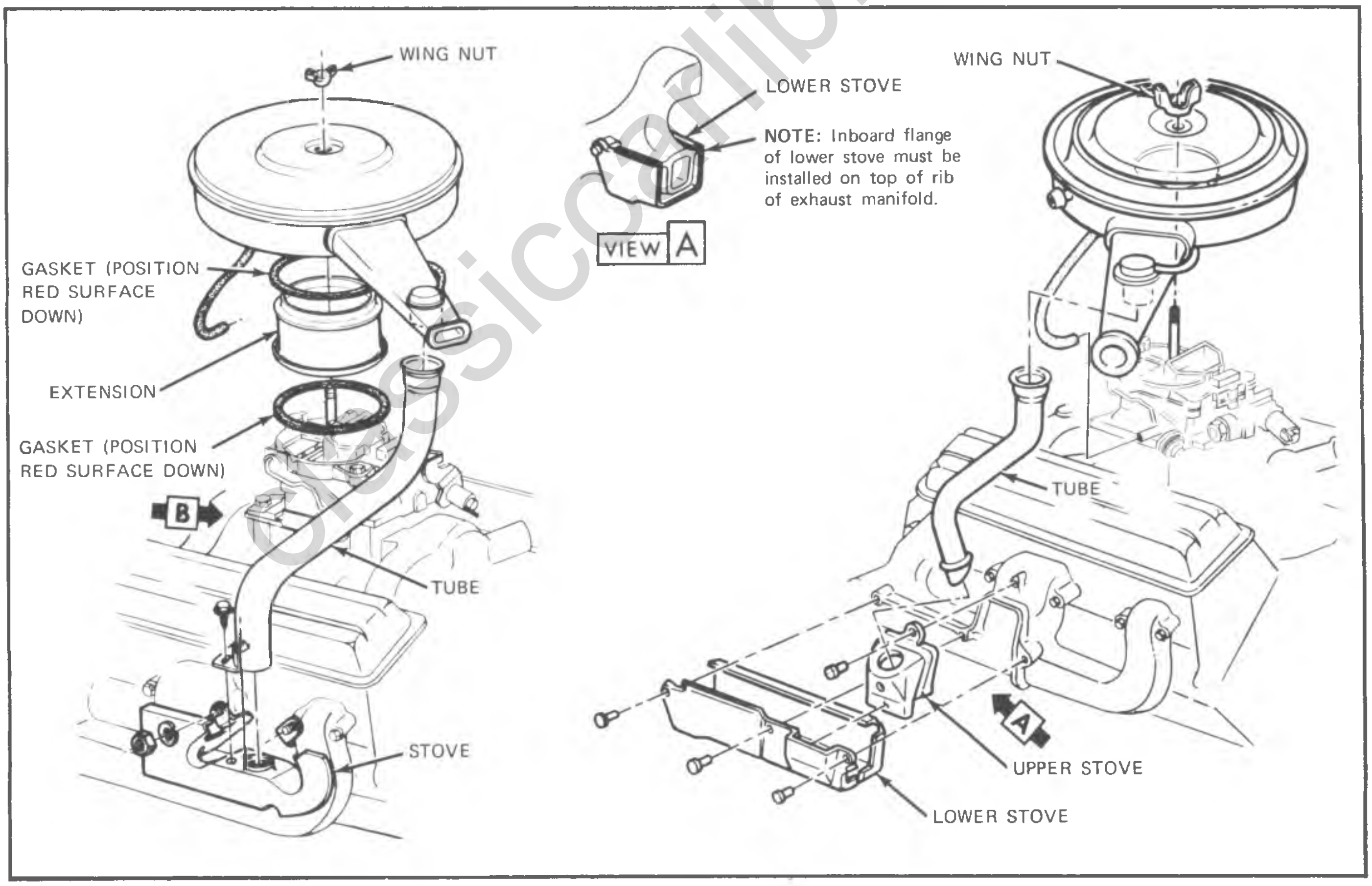


Fig. 75—Air Cleaner-P20(42), P30(42), P30(32)

Fig. 76—Damper Door Thermometer Reading

85°F, snorkel passage should be closed. (fig. 68 view B) When damper door begins to open snorkel passage, remove air cleaner cover and observe thermometer reading. It should be between 85°F and 115°F.

4. If damper door does not close completely or does not open at correct temperature continue with the following vacuum motor check:

   a. Turn off engine. Disconnect diaphragm assembly vacuum hose at sensor unit.

   b. Apply at least 9 in. Hg. of vacuum to diaphragm assembly through the hose. This can be done by mouth. Damper door should completely close snorkel passage when vacuum is applied. If not, check to see if linkage is hooked up correctly. Also check for a vacuum leak.

   c. With vacuum applied, bend or clamp hose to trap vacuum in diaphragm assembly. Damper door should remain in position (closed snorkel passage). If it does not, there is a vacuum leak in diaphragm assembly. Replace diaphragm assembly.

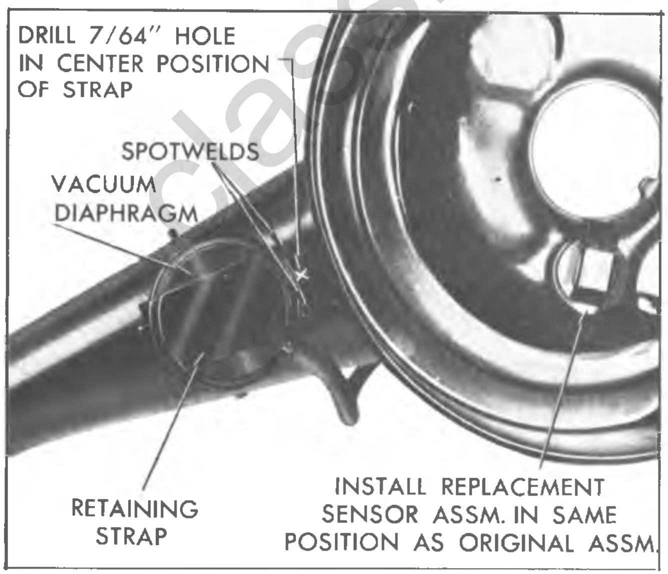


Fig. 77—Vacuum Diaphragm Replacement

5. If vacuum motor check is found satisfactory, replace sensor unit.

Vacuum Motor Replacement

Removal

1. Remove air cleaner from engine.
2. Drill out spot welds fastening vacuum motor retaining strap to snorkel tube.
3. Remove vacuum motor by lifting and unhooking linkrod from damper door.

Replacement

1. Drill 7/64" hole in snorkel tube at center of vacuum motor retaining strap (fig. 77).
2. Connect vacuum motor linkage to damper door. Fasten retaining strap to air cleaner with sheet metal screw.
3. Replace air cleaner on engine and check operation of vacuum motor and control damper assembly.

Temperature Sensor Replacement

Removal

1. Remove air cleaner from engine and disconnect vacuum hoses at sensor.
2. Pry up tabs of sensor retaining clip (fig. 78). Observe position of sensor, new sensor must be installed in this same position.
3. Remove clip and sensor from air cleaner.

Replacement

1. Install sensor and gasket assembly in air cleaner in position as noted above.

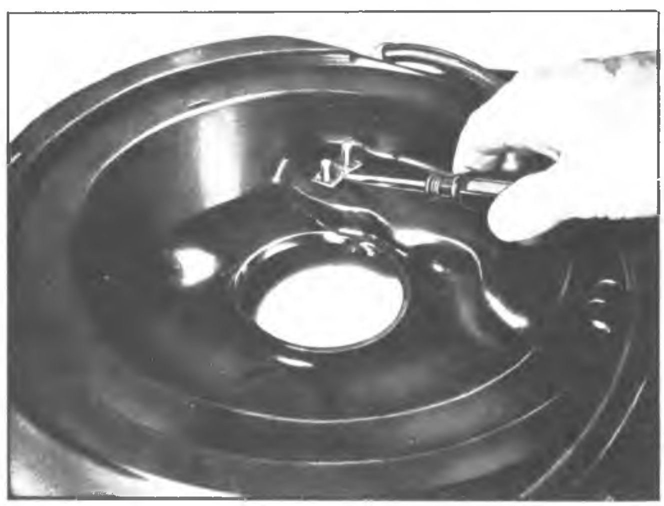


Fig. 78—Removing Sensor Unit

2. Press retaining clip on sensor. Support the sensor on its sides to prevent damage to the control mechanism at the center.
3. Install air cleaner on engine and connect vacuum hoses.

CARBURETOR AIR INTAKE

Refer to figure 79 for carburetor air intake used on CK trucks.

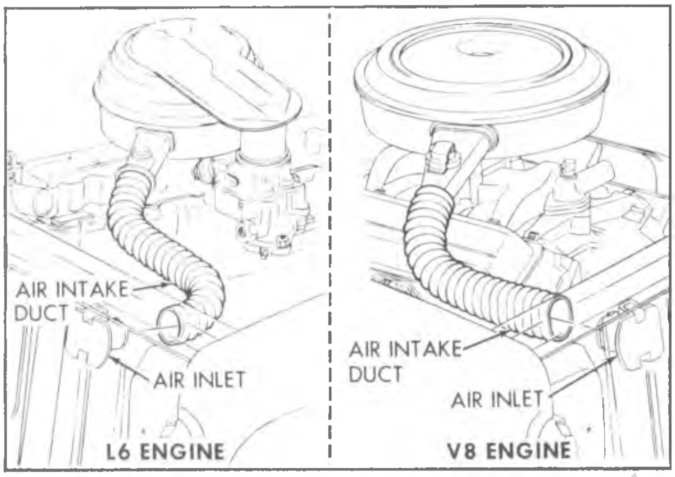


Fig. 79—Carburetor Air Intake - CK

FUEL PUMP

GENERAL

The fuel pump is a diaphragm type. The pump is actuated by an eccentric located on engine camshaft. On in-line engine, the eccentric actuates the rocker arm. On V-8 engines, a push rod (located between camshaft eccentric and fuel pump) actuates the pump rocker arm. Because of design, this pump is serviced as an assembly only.

INSPECTION

The fuel pump (figs. 80 through 82) should be checked to make sure mounting bolts and inlet and outlet connections are tight.

TEST

Always test pump while it is mounted on engine and be sure there is gasoline in tank.

The line from the tank to the pump is the suction side of system and the line from pump to carburetor is the pressure side of system. A leak on pressure side, therefore, would be made apparent by dripping fuel, but a leak on the suction would not be apparent except for its effect of reducing volume of fuel on pressure side.

1. Tighten any loose line connections and look for bends or kinks in lines.
2. Disconnect fuel pipe at carburetor. Disconnect distributor to coil primary wire so that engine can be cranked without firing. Place suitable container at end of pipe and crank engine a few revolutions.

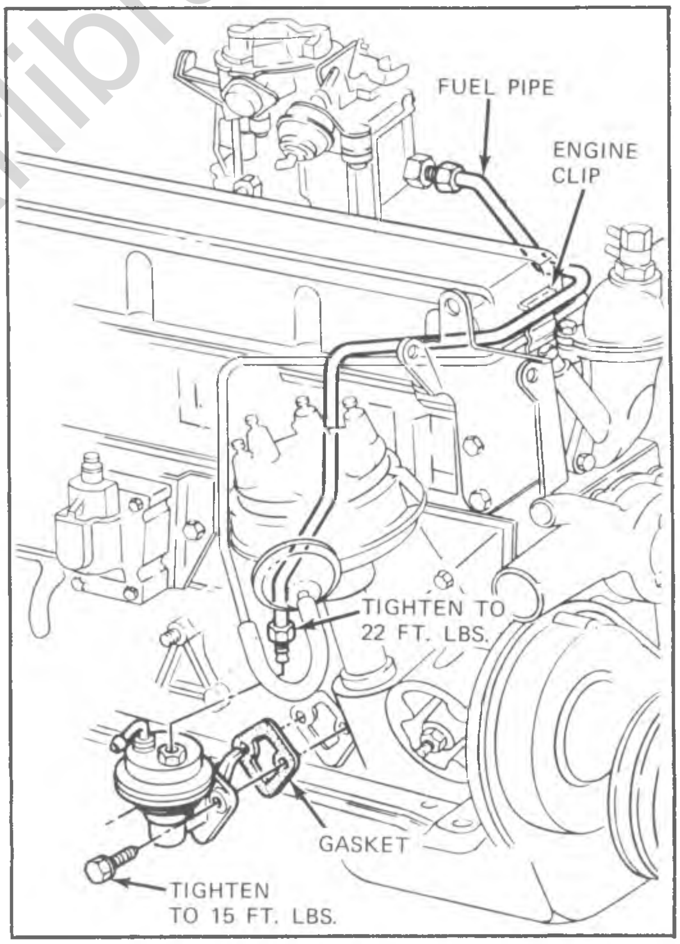


Fig. 80—Fuel Pump - L6

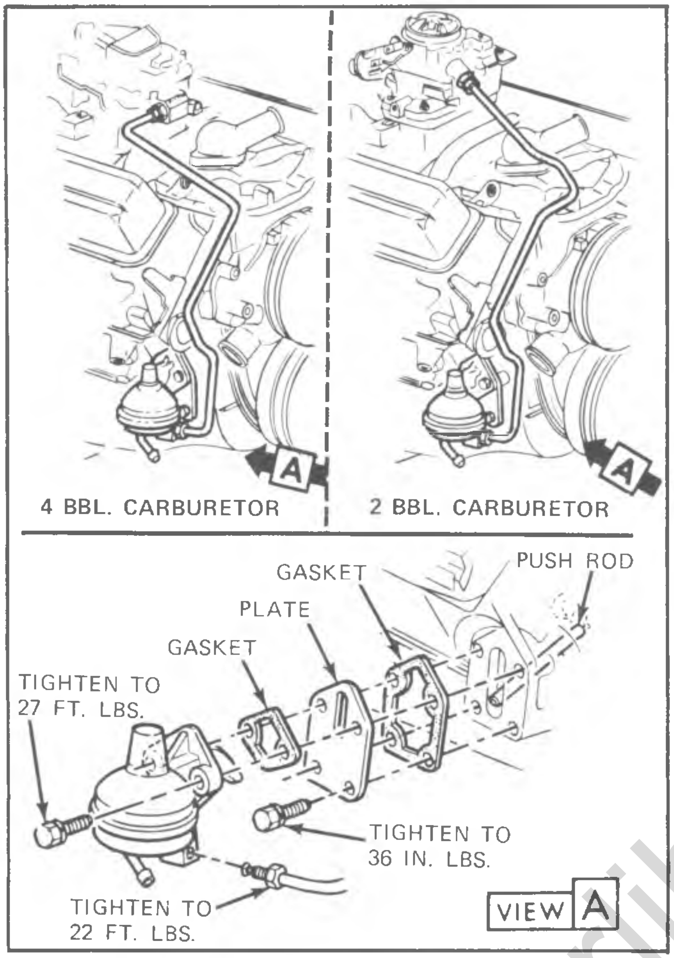


Fig. 81—Fuel Pump - 350/400 V8

If little or no gasoline flows from open end of pipe, then fuel pipe is clogged or pump is inoperative. Before removing pump, disconnect fuel pipe at gas tank and outlet pipe and blow through them with an air hose to make sure they are clear. Reconnect pipes and retest while cranking engine.

3. If fuel flows from pump in good volume from pipe at carburetor, check fuel delivery pressure to be certain that pump is operating within specified limits as follows:

   a. Attach a fuel pump pressure test gauge to disconnected end of pipe.

   b. Run engine at approximately 450-1,000 rpm (using gasoline in carburetor bowl) and note reading on pressure gauge.

   c. If pump is operating properly, the pressure will be within specifications and will remain constant at speeds between 450-1,000 rpm. If pressure is too low, too high, or varies significantly at different speeds, the pump should be replaced.

REMOVAL

NOTE: Whenever disconnecting or connecting fuel pump outlet pipe fitting, always double wrench to avoid damaging fuel pump.

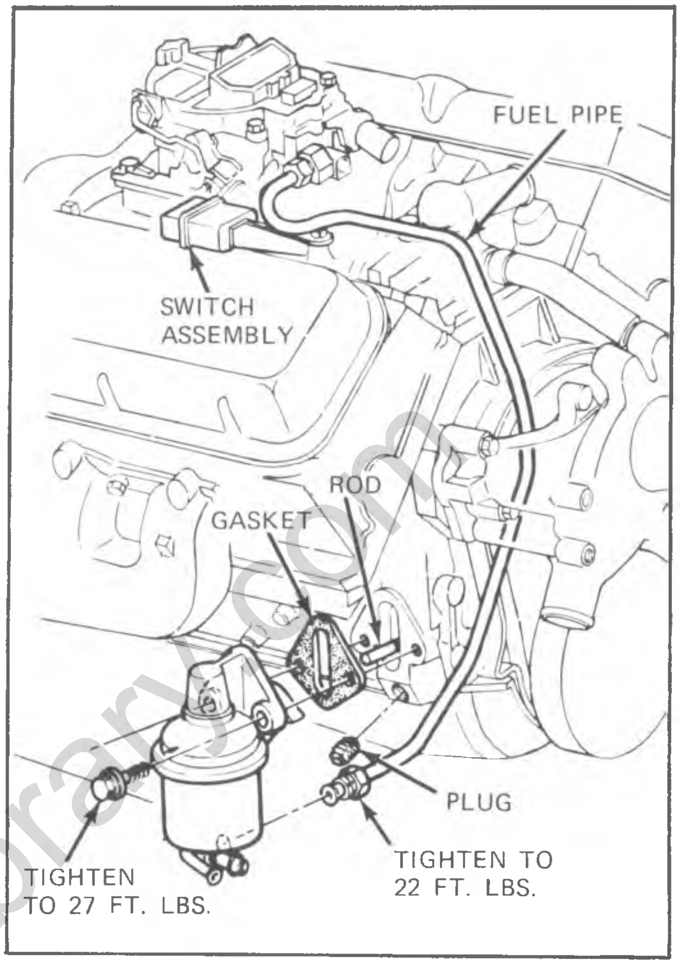


Fig. 82—Fuel Pump - 454 V8

1. Disconnect fuel inlet and outlet pipes at fuel pump.
2. Remove fuel pump mounting bolts and remove pump and gasket.
3. On V8 engines if push rod is to be removed, remove pipe plug and push rod (454 cu. in. engines), and fuel pump adapter and gasket and push rod (350 and 400 cu. in. engines).

INSTALLATION

1. On V8 engines, if fuel pump push rod has been removed, install push rod and pipe fitting or fuel pump adapter using gasket sealer on gasket or pipe fitting.
2. Install fuel pump using a new gasket and tighten securely. Use sealer on fuel pump mounting bolt threads.

   NOTE: On V8 engines, a pair of mechanical fingers or heavy grease may be used to hold fuel pump push rod up while installing fuel pump.

3. Connect fuel pipes to pump.
4. Start engine and check for leaks.

FUEL PUMP DIAGNOSIS

CAMSHAFT DRIVEN FUEL PUMP

Complete diagnosis of all possible causes of the trouble prior to replacement of the fuel pump will save time, expense and possibly prevent a repeat complaint.

When a fuel pump is suspected of not performing properly, the following tests must be made:

NOTE: Do not remove the pump for any of these inspections or tests. Be certain sufficient gasoline is in the tank.

INITIAL INSPECTION

1. Be certain all fittings and connections are tight and cannot leak fuel between the pump and the carburetor or air between the gas tank and the pump.
2. Look for kinks in the fuel lines.
3. With engine idling, look for leaks:
   a. In the line between the pump and the carburetor.
   b. At the diaphragm flange on the pump.
   c. At the breather holes in the pump casting.
   d. At the sheet metal cover (pump) and its fittings.

   If leaks are evident in the lines or fittings, tighten or replace as necessary. If the fuel pump leaks (diaphragm flange, sheet metal cover, or pump casting breather holes), replace the pump.

If the above steps do not cure the problem, proceed to the next test.

VACUUM TEST:

This will determine if the pump has the ability to pump fuel:

1. Disconnect the fuel line at the carburetor. Install a rubber hose on to the fuel line and run it back into the gas tank.
2. Disconnect the inlet fuel line at the pump. Fasten the inlet line in an up position so fuel will not run out. Install a vacuum gage on to the inlet of the pump.
3. With engine idling (using fuel in the carburetor float bowl), the vacuum should be at least 12" Hg.
4. If the vacuum is less than 12" Hg., replace pump. If the vacuum is okay, proceed to the next test.

NOTE: Do not be concerned if vacuum drops off after the engine is stopped. Many pumps have valves with a bleed hole that allows vapors to bleed back to the gasoline tank.

PRESSURE TEST:

This will determine if the pump can deliver fuel at the proper pressure to the carburetor:

1. Reconnect the inlet fuel line to the pump.
2. Reconnect the fuel line at the carburetor. Idle engine for two minutes so the carburetor float bowl can be refilled. (This step may be omitted if enough fuel remains in the carburetor after vacuum test.)
3. Disconnect fuel line at the carburetor and install a pressure gage into the end of this fuel line. If the pump has a vapor return line, pinch the line closed.
4. With the engine idling (using fuel in the carburetor float bowl), the pressure gage when held at the level of the pump outlet should read at least 3½ psi.
5. If the pressure is less than this value, determine if the line from the pump to the carburetor is restricted. If this line is restricted, replace or clean it. If the line is not restricted, remove the pump and install a new one.
6. If the pressure is okay, determine if fuel can be pulled up to the pump. Disconnect the fuel line at both the fuel pump inlet and the gas tank outlet. Blow air into the fuel pump end of the line to determine if fuel can flow through this line.

NOTE: Failure to disconnect the fuel line at the gasoline tank prior to blowing air, can damage the tank strainer. If the line is restricted, replace or clean it. If the line was not restricted, proceed to other areas such as gas tank or carburetor. The fuel pump is not at fault.

SECTION 6T

EMISSION CONTROL SYSTEMS

CONTENTS OF THIS SECTION

NOTE: Except for the following changes, all information listed in Section 6T of the 1974 Truck Service Manual is applicable to 1975 light duty trucks. Refer to 1974 Truck Service Manual for any service procedures not contained herein.

AIR INJECTION REACTOR SYSTEM

The A.I.R. system remains basically the same in theory and operation with the following modification on trucks equipped with light duty emission controls.

- Addition of converter A.I.R., whereby air is injected into the exhaust manifold forward of the catalytic converter. Refer to 1974 Service Manual when performing service on the A.I.R. system.

EARLY FUEL EVAPORATION SYSTEM

An early fuel evaporation E.F.E. valve is used on all engines with light duty emission systems. This system provides improved driveability while reducing exhaust emissions. (Fig. 1).

L-6 and Mark IV

L-6 and Mark IV EFE systems consist of an EFE valve at the flange of the exhaust manifold, an actuator, a thermal vacuum switch (TVS) and a vacuum solenoid. The Thermal Vacuum Switch (TVS) is located on the right hand side of the case forward of the oil pressure switch on L-6 engines and directly above the oil filter on Mark IV. The TVS is a normally closed switch which is sensitive to oil temperature. With a cold engine, below 150°F. on L-6 and 100°F. on Mark IV, the TVS is closed which energizes the vacuum solenoid and allows manifold vacuum to the actuator valve. The vacuum pulls the diaphragm bellows in the actuator, closing the EFE valve. This causes the hot exhaust gases to be routed up to the base of the carburetor. When oil temperature reaches 150°F. on L-6 or 100°F. on Mark IV the thermal vacuum switch opens. This de-energizes the vacuum solenoid, denying vacuum to the actuator. Without vacuum, an internal spring in the actuator pushes the diaphragm bellows back to its "at rest" position, opening the EFE valve.

Small Block V8

Small block V8 EFE systems consist of an EFE valve at the flange of the exhaust manifold, an actuator and a thermal vacuum switch (TVS). The TVS is mounted in the coolant outlet housing and directly controls vacuum. With coolant temperatures below 180°F., manifold vacuum is applied to the actuator which in turn closes the EFE valve. This routes the hot exhaust gases to the base of the carburetor. When temperatures reach 180°F., vacuum to the actuator is denied. This allows an internal spring to return the actuator to its "at rest" position, opening the EFE valve.

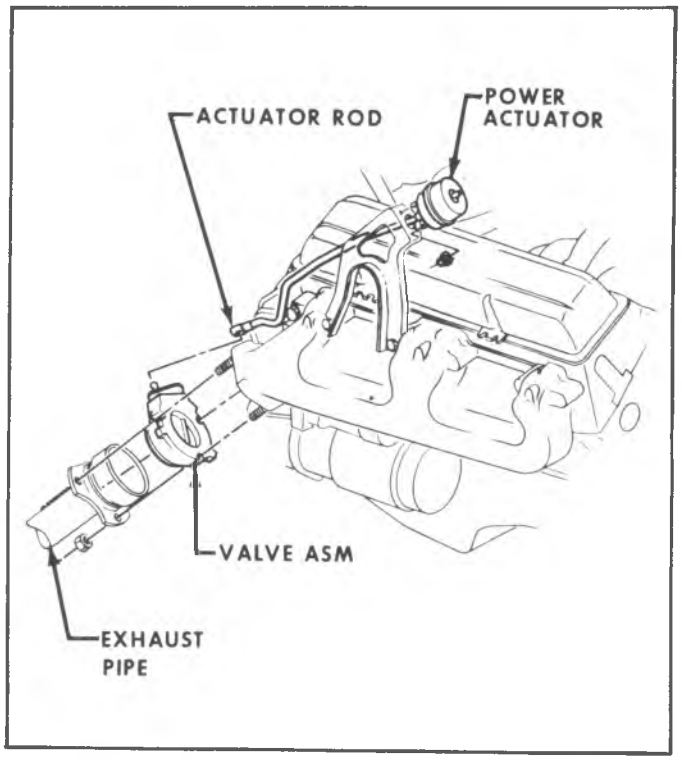


Fig. 1 — Typical EFE Valve

THROTTLE RETURN CONTROL SYSTEM

A throttle return control system (TRC) is also used on some California Truck engines.

OPERATION

When the vehicle is coasting against the engine, the control valve (Fig. 2) will be open to allow vacuum to operate the throttle lever actuator. The throttle lever actuator then pushes the throttle lever slightly open, thus reducing the hydro-carbon emission during coast down. When manifold vacuum drops below a pre-determined level the control valve closes, the throttle actuator retracts and the throttle lever closes to idle position.

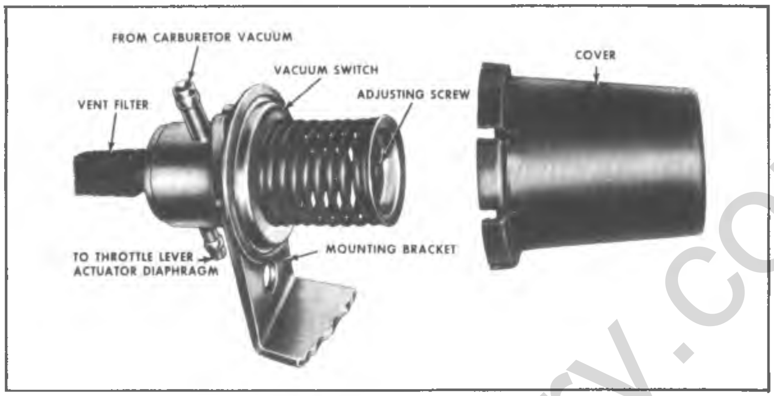


Fig. 2 — Throttle Return Control Valve — Typical

THROTTLE RETURN CONTROL (TRC) SYSTEM DIAGNOSIS HOW TO CHECK AND ADJUST THE TRC SYSTEM

CONTROL VALVE — CHECKING PROCEDURE:

1. Disconnect valve to carburetor hose at the carburetor and connect to an external vacuum source equipped with a vacuum gauge.
2. Disconnect the valve to actuator hose at the actuator and connect to a vacuum gauge.
3. Place finger firmly over the end of the bleed fitting (the foam air filter need not be removed).
4. Apply a minimum of 23 in. Hg. vacuum to the control valve and seal off the vacuum source. The gauge on the actuator side should read the same as the source gauge. If not, then the valve needs adjustment. If the vacuum drops off on either gauge (finger still on the bleed fitting), the valve is leaking and must be replaced.
5. With a minimum 23 in. Hg. vacuum level in the valve, remove finger from bleed fitting. The vacuum reading on the actuator side will drop to zero and the reading on the source gauge will drop to a value which will be designated as the valve set point. If this value is not within .50 in. Hg. of the specified valve set point, then the valve must be adjusted per the Control Valve Adjusting Procedure.

THROTTLE LEVER ACTUATOR — CHECKING PROCEDURE:

1. Disconnect valve to actuator hose at valve and connect to an external vacuum source equipped with a vacuum gauge.
2. Apply 20 in. Hg. vacuum to the actuator and seal off the vacuum source. If the vacuum gauge reading drops, then the actuator is leaking and must be replaced.
3. To check the actuator for proper operation:
   a. Check the throttle lever, shaft, and linkage to be sure that they operate freely without binding or sticking.
   b. Start engine and run until warmed up and idle is stable with transmission in neutral or park. Note idle RPM.
   c. Apply 20 in. Hg. vacuum to the actuator. Manually open the throttle slightly and allow to close against the extended actuator plunger. Note the engine RPM.
   d. Release and reapply 20 in. Hg. vacuum to the actuator and note the RPM to which the engine speed increases (do not assist the actuator).

e. If the RPM obtained in step 3 d is not within 150 RPM of that obtained in step 3c, then the actuator plunger may be binding due to dirt, corrosion, varnish, etc. or the actuator diaphragm may be too weak. If binding is not indicated or cannot be corrected then the actuator must be replaced.

f. Release the vacuum from the actuator and the engine speed should return to within 50 RPM of the idle speed noted in step 3b. If it does not, the plunger may be binding due to dirt, corrosion, varnish, etc. If the problem cannot be corrected, the actuator must be replaced.

4. If the engine RPM noted in 3c is not within the specified TRC speed range, the TRC actuator must be adjusted per the throttle lever actuator adjusting procedure.

CONTROL VALVE – ADJUSTING PROCEDURE:

1. Disconnect valve to carburetor hose at the carburetor and connect to an external vacuum source equipped with a vacuum gauge.
2. Disconnect the valve to actuator hose at the actuator and connect to a vacuum gauge.
3. Place finger firmly over the end of the bleed fitting (the foam air filter need not be removed).
4. Apply a minimum 23 in. Hg. vacuum to the control valve and seal off the vacuum source. Remove finger from bleed fitting. The vacuum reading on the actuator side will drop to zero and the reading on the source gauge will drop to a value which will be designated as the valve set point. If this value is not within .50 in. Hg. of the specified valve set point, then the valve must be adjusted.
5. To adjust the valve set point:

a. Gently pry off the conical plastic cover.

b. Turn the adjusting screw in (clockwise) to raise the set point or out (counter-clockwise) to lower the set point value.

c. Recheck the valve set point per steps No. 3 and 4.

d. Repeat steps 5b and c as necessary to obtain the specified value within .50 in. Hg.

e. Reinstall plastic cover.

6. If the valve cannot be adjusted it must be replaced.

VALVE SET POINTS

Engine	Set Point - in. Hg.
350 - 4V	21.5
400 - 4V	21.5
454 - 4V	21.0

THROTTLE LEVER ACTUATOR – ADJUSTING PROCEDURE:

1. Disconnect valve to actuator hose at valve and connect to an external vacuum source equipped with a vacuum gauge.
2. Check the throttle lever, shaft, and linkage to be sure that they operate freely without binding or sticking.
3. Start engine and run until warmed up and idle is stable. Place transmission in neutral or park.
4. Apply 20 in. Hg. vacuum to the actuator. Manually open the throttle slightly and allow to close against the extended actuator plunger. Note the engine RPM.
5. If the RPM noted above is not within the specified TRC speed range, then turn the screw on the actuator plunger in the appropriate direction and repeat step No. 4 until the specified TRC speed range is obtained.

TRC SPEED

Engine	Setting RPM
350/400 CID	1475-1525
454 CID	1375-1425

SECTION 6Y

ENGINE ELECTRICAL

NOTE: Except for the following changes, all information listed in Section 6Y of the 1974 Truck Service Manual is applicable to 1975 light duty trucks. Refer to 1974 Truck Service Manual for any service procedure not contained herein.

10-SI SERIES GENERATOR

The 1975 10-SI generator is mostly carryover from 1974. The only difference being that a 40-ohm resistor has been added to the warning indicator circuit (figs. 1c and 2c). The purpose of this resistor is to provide a definite warning indicator light in the case of an open field circuit in the generator. Refer to Section 6Y of the 1974 Truck Service Manual for all service procedures.

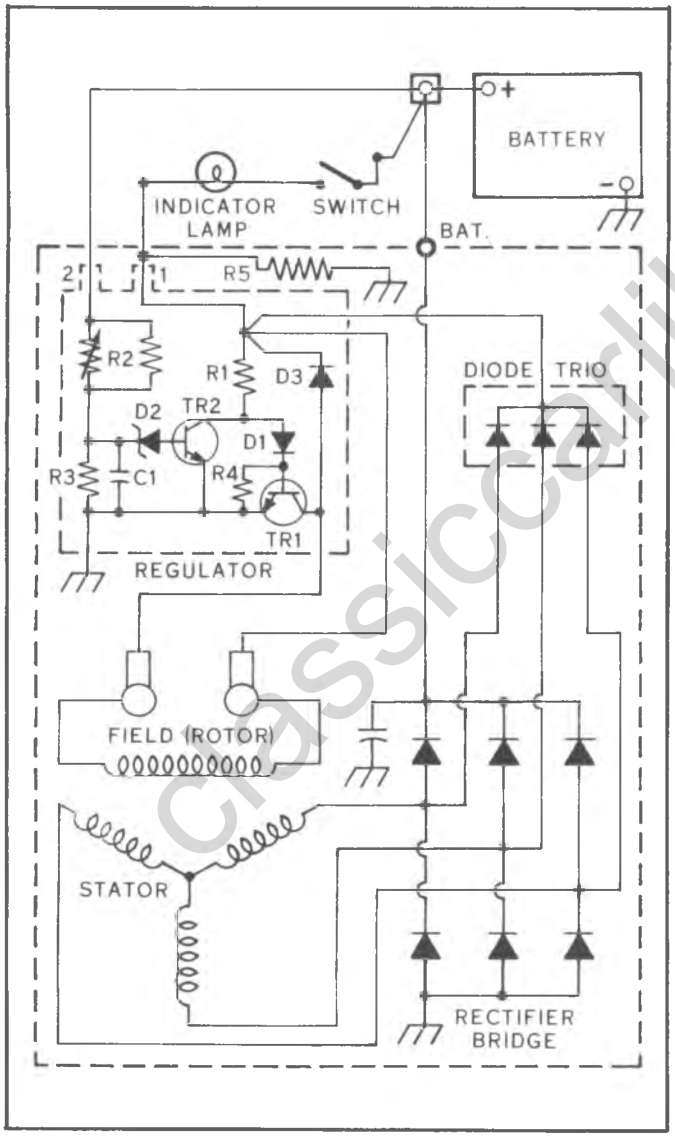


Fig. 1C—Integral Charging System Circuitry

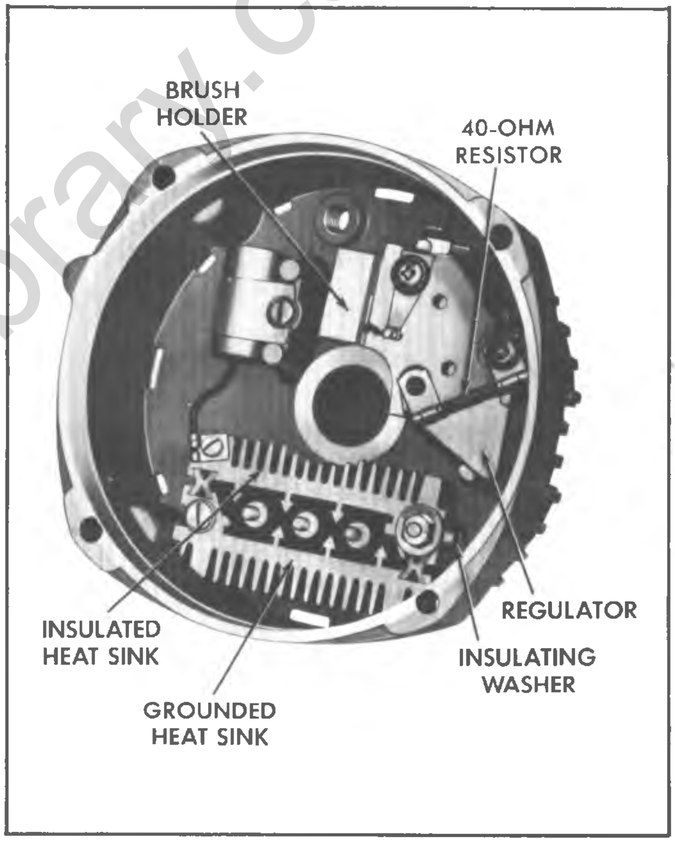


Fig. 2C—Resistor Location

STARTER SYSTEM

The 1975 starter is mostly carryover from 1974. The only difference being that the "R" terminal of the starter solenoid has been removed. This terminal was removed because with the High Energy Ignition System there is no longer any requirement for the electrical lead from the starter solenoid to the ignition coil. Refer to Section 6Y of the 1974 Truck Service Manual for all service procedures.

HIGH ENERGY IGNITION SYSTEM

INDEX

GENERAL DESCRIPTION

There are two types of HEI distributors. The 8 cylinder distributor (fig. 1i) combines all ignition components in one unit. The ignition coil is in the distributor cap and connects directly to the rotor. The 6 cylinder distributor (fig. 2i) has an external mounted coil. Both operate basically in the same manner as a conventional ignition system except the module and pick-up coil of the HEI system replace the contact points of the conventional system.

The high Energy Igntion is a pulse triggered, transistor controlled, inductive discharge ignition system. The magnetic pick-up assembly located inside the distributor contains a permanent magnet, a pole piece with internal teeth, and a pick-up coil. When the teeth of the timer core rotating inside the pole piece line up with teeth of the pole piece, an induced voltage in the pick-up coil signals the all electronic module to open the coil primary circuit. The primary current decreases and a high voltage is induced in the ignition coil secondary winding which is directed through the rotor and high voltage leads to fire the spark plugs. The capacitor in the distributor is for radio noise suppression.

The module automatically controls the dwell period, stretching it with increasing engine speed. The HEI system also features a longer spark duration, made possible by the higher amount of energy stored in the coil primary. This is desirable for firing lean and EGR diluted mixtures.

Ignition Coil

In the 8 cylinder HEI system, the igntion coil is built into the distributor cap. In the 6 cylinder HEI system, the ignition coil is mounted externally. The coil is somewhat

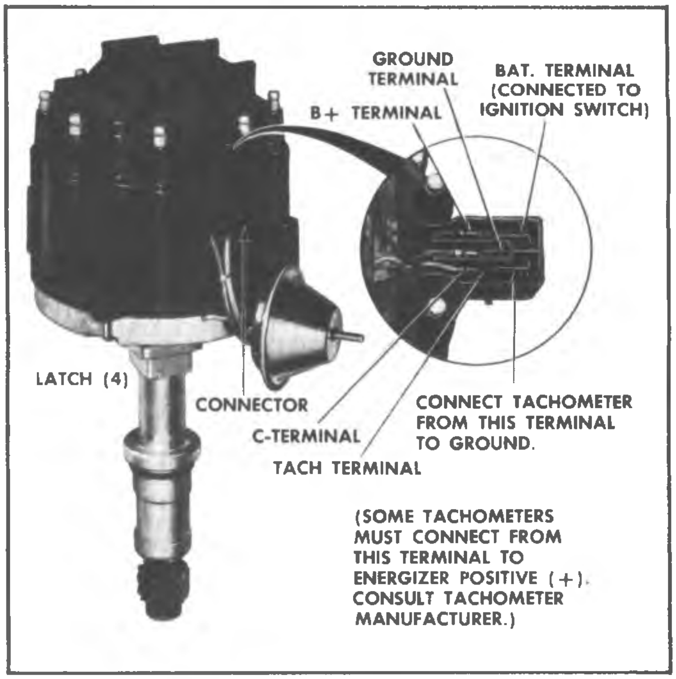


Fig. 1i—8 Cylinder HEI Distributor

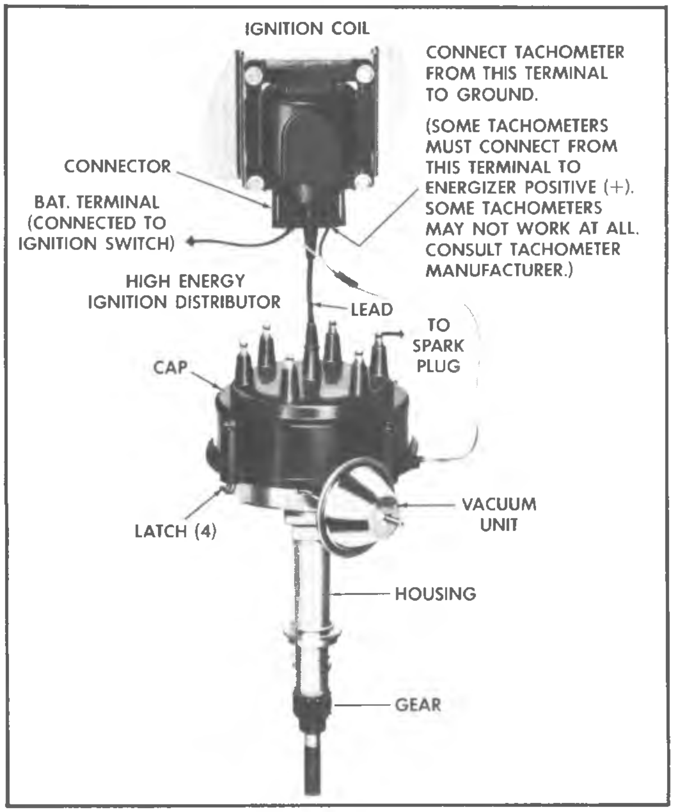


Fig. 2i—6 Cylinder HEI Distributor

smaller physically than a conventional coil, but has more primary and secondary windings. It is built more like a true transformer with the windings surrounded by the laminated iron core. A conventional coil has the iron core inside the windings. Although the HEI coil operates in basically the same way as a conventional coil, it is more effective in generating higher secondary voltage when the primary circuit is broken.

Electronic Module

The electronic module is a solid state unit containing five complete circuits which control spark triggering, switching, current limiting, dwell control and distributor pick-up. Dwell angle is controlled by a transistor circuit within the module and is varied in direct relation to engine speed.

Pick-Up Assembly

The pick-up assembly consists of the following:

1. A rotating timer core with external teeth which is turned by the distributor shaft.
2. A stationary pole piece with internal teeth.
3. A pick-up coil and magnet which are located between the pole piece and a bottom plate.

Centrifugal and Vacuum Advance

The centrifugal and vacuum advance mechanisms are basically the same types of units that provide spark advance in the breaker-type system. Centrifugal advance is achieved through the rotation of the timer core in relation to the distributor shaft. Vacuum advance is achieved by attaching the pick-up coil and pole piece to the vacuum advance unit actuating arm.

THEORY OF OPERATION

The pick-up coil is connected to transistors in the electronic module. The electronic module is connected to the primary windings in the coil. As the distributor shaft turns the timer core teeth out of alignment with the teeth of the pole piece a voltage is created in the magnetic field of the pick-up coil.

The pick-up coil sends this voltage signal to the electronic module, which determines from RPM when to start current building in the primary windings of the ignition coil.

Each time the timer core teeth align with the pole piece teeth the pick-up coil magnetic field is changed creating a different voltage. The pick-up coil sends this different voltage signal the electronic module which electronically shuts off the ignition coil primary circuit. This in turn collapses the coil magnetic field, induces high secondary voltage and fires one spark plug.

The electronic module delivers full battery voltage to the ignition coil which is limited to five to six amperes. There is no primary resistance wire in the HEI system. The electronic module triggers the closing and opening of the primary circuit instantaneously with no energy lost due to breaker point arcing or capacitor charging time lag. The capacitor in the HEI unit functions only as a radio noise suppressor.

This instantaneous and efficient circuit triggering enables the HEI system to deliver up to approximately 35,000 volts through the secondary wiring to the spark plugs.

Because of the higher voltage, the HEI system has larger diameter (8 millimeter) spark plug wires with silicone insulation. The silicone wire is gray in color, more heat resistant than standard black wire and less vulnerable to deterioration. Silicone insulation is soft, however, and must not be mishandled.

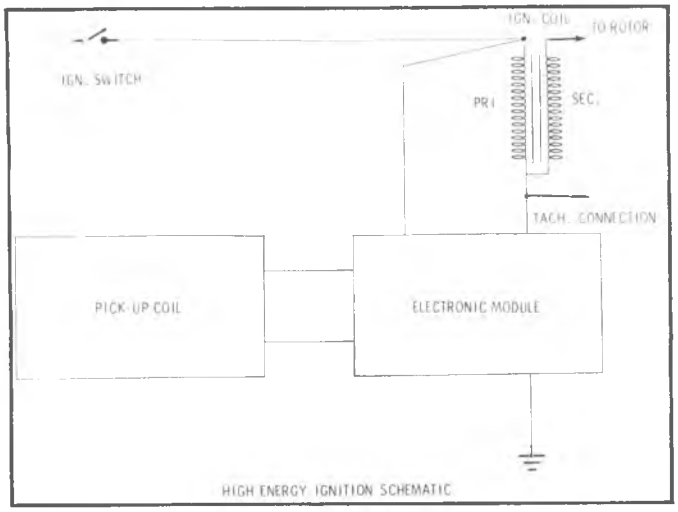


Fig. 3i—High Energy Ignition Basic Wiring

SERVICE OPERATIONS

Routine Maintenance

The HEI system is designed to be free from routine maintenance. If component part replacement should become necessary, however, several items specific to the HEI system should be noted.

Electronic Module

The electronic module is serviced by complete replacement only. When replacing the module a liberal coating of special silicone grease MUST be applied to the metal mounting surface on which the module will be installed. If this grease is not applied the module will not cool properly which can cause the module to malfunction. A tube of this special silicone grease is supplied with each replacement module.

Spark Plug Wires (Figs. 4i, 5i)

The 8 millimeter silicone insulation spark plug wire boots seal more tightly to the spark plugs. Twist the boot about a half turn in either direction to break the seal before pulling on the boot to remove the wire.

WARNING: Do Not remove spark plug wires with the engine running. The higher secondary voltage is capable of jumping an arc of greater distance and could cause an electric shock.

Timing Light Connections

Timing light connections should be made in parallel using an adapter at the distributor number one terminal.

Tachometer Connections

In the distributor cap connector is a "tach" terminal. Connect the tachometer to this terminal and to ground. Some tachometers must connect from the "tach" terminal to the battery positive (+) terminal. Follow tachometer manufacturer's instructions.

CAUTION: *Grounding "tach" terminal could damage the HEI electronic module.*

Other Test Equipment

Oscilliscopes require special adaptors. Distributor machines require a special amplifier. The equipment manufacturers have instructions and details necessary to modify test equipment for HEI diagnosis.

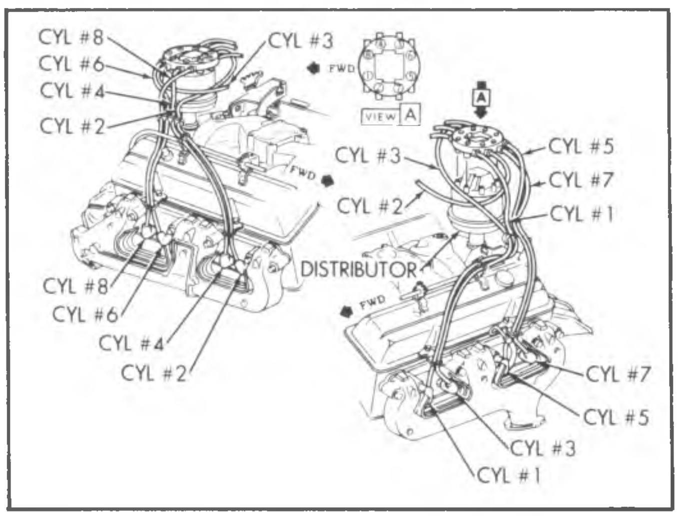


Fig. 4i—8 Cylinder HEI Ignition Wiring

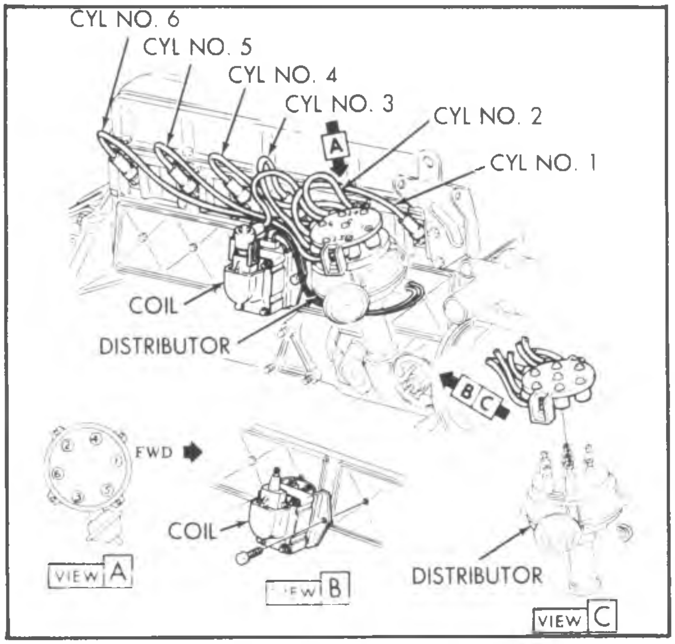


Fig. 5i—6 Cylinder HEI Ignition Wiring

Vacuum and Centrifugal Advance Specifications

Vacuum and centrifugal advance specifications are listed in the Specifications Section of this manual.

Distributor Removal and Installation

Removal

1. Disconnect wiring harness connectors at side of distributor cap.
2. Remove distributor cap and position out of way.
3. Disconnect vacuum advance hose from vacuum advance mechanism.
4. Scribe a mark on the engine in line with rotor. Note approximate position of distributor housing in relation to engine.
5. Remove distributor hold-down nut and clamp.
6. Lift distributor from engine.

Installation

1. Install distributor using same procedure as for standard distributor.
2. Install distributor hold-down clamp and snugly install nut.
3. Move distributor housing to approximate position relative to engine noted during removal.
4. Position distributor cap to housing with tab in base of cap aligned with notch in housing and secure with four latches.
5. Connect wiring harness connector to terminals on side of distributor cap. Connector will fit only one way.
6. Adjust ignition timing as described in Specification Section of this manual.

Distributor Disassembly and Assembly

Disassembly (Figs. 6i — 8i)

1. Remove distributor as described above.
2. Remove rotor from distributor shaft by removing two screws.
3. Remove two advance springs, weight retainer, and advance weights.
4. Remove two screws holding module to housing and move module to a position where connector may removed from 'B' and 'C' terminals.
5. Remove wires from "W" and "G" terminals of module.
6. Remove roll pin from drive gear.

   CAUTION: *Distributor gear should be supported in such a way that no damage will occur to distributor shaft while removing pin.*

7. Remove gear, shim and tanged washer from distributor shaft. Remove any burrs that may have been caused by removal of pin.
8. Remove distributor shaft from housing.
9. Remove washer from upper end of distributor housing.
10. Remove three screws securing pole piece to housing and remove pole piece, magnet and pick-up coil.
11. Remove lock ring at top of housing and remove pick-up coil retainer, shim and felt washer.

    NOTE: No attempt should be made to service the shaft bushings in the housing.

12. Remove vacuum advance mechanism by removing two screws.
13. Disconnect capacitor lead and remove capacitor by removing one screw.
14. Remove wiring harness from distributor housing.

Assembly (Figs. 6i - 9i)

1. Position vacuum advance unit to housing and secure with two screws.
2. Position felt washer over lubricant reservoir at top of housing.
3. Position shim on top of felt washer.
4. Position pick-up coil retainer to housing with vacuum advance arm over actuating pin of vacuum advance mechanism. Secure with lock ring.
5. Install pick-up coil magnet and pole piece. Loosely install three screws holding pole piece.
6. Install washer to top of housing.
7. Install distributor shaft and rotate to check for even

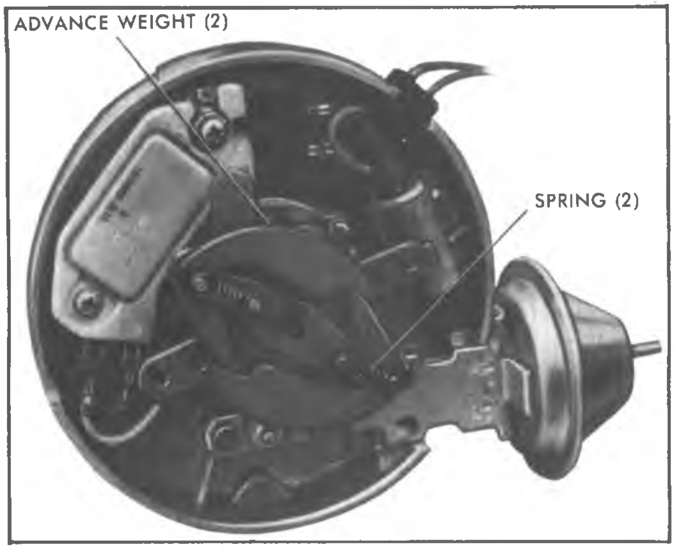


Fig. 6i—Distributor Centrifugal Advance

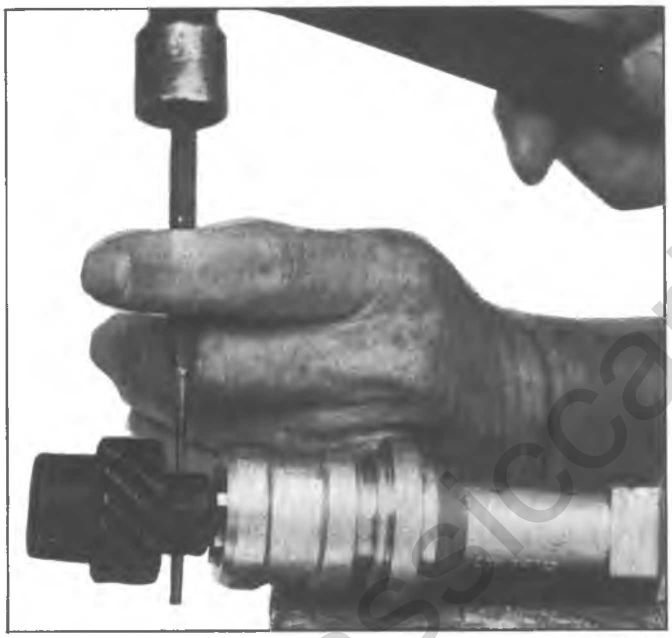


Fig. 7i—Roll Pin Removal

clearance all around between pole piece and shaft projections.

8. Move pole piece to provide even clearance and secure with three screws.
9. Install tanged washer, shim and drive gear (teeth up) to bottom of shaft. Align drive gear and install new roll pin.
10. Position capacitor to housing and loosely install one mounting screw.
11. Install connector to "B" and "C" terminals on module with tab on top.
12. Apply special silicone oubricant liberally to bottom of module and secure with two screws.

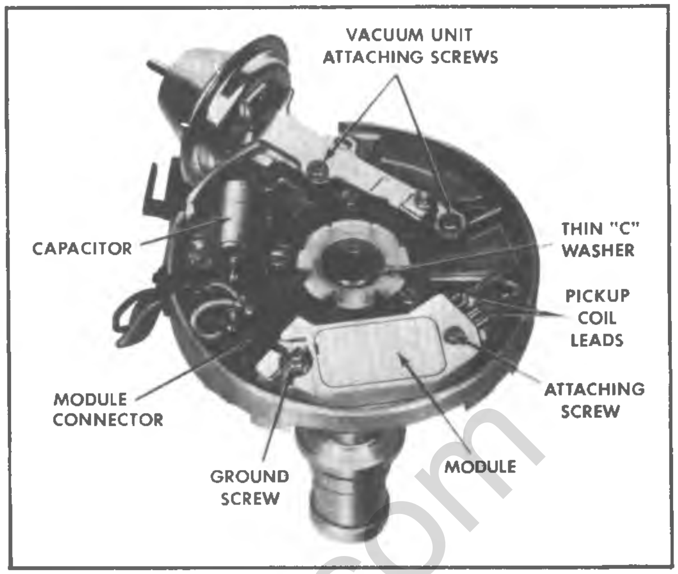


Fig. 8i—Top View of Distributor Housing

13. Position wiring harness with grommet in housing notch.
14. Connect pink wire to capacitor stud, and black wire to capacitor mounting screw. Tighten screw.
15. Connect white wire from pick-up coil to terminal "W" module.
16. Connect green wire from pick-up coil to terminal "G" of module.
17. Install centrifugal advance weights, weight retainer (dimple facing down), and springs.
18. Install rotor and secure with two screws.

CAUTION: *Notch on side of rotor must engage tab on cam weight base.*

19. Install distributor as described above.

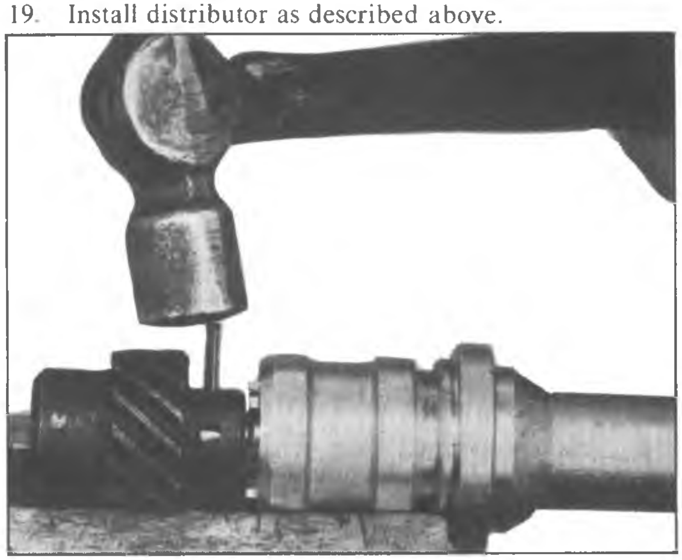


Fig. 9i—Roll Pin Installation

Ignition Coil—8 Cylinder

Removal (Fig. 10i)

1. Disconnect battery wire and harness connector from distributor cap.
2. Remove three screws securing coil cover to distributor cap.
3. Remove four screws securing ignition coil to distributor cap.
4. Remove ground wire from coil.
5. Push coil leads from under side of connectors and remove coil from distributor cap.

Installation (Fig. 10i)

1. Position coil into distributor cap with terminals over connector at side of cap.
2. Push coil lead wires into connector on side of cap as follows: black (ground) in center; brown next to vacuum advance unit; pink opposite vacuum advance unit.
3. Secure ignition coil with four screws. Place ground wire under coil mounting screw.
4. Install coil cover onto distributor cap and secure with three screws.

Ignition Coil—6 Cylinder

Removal (Fig. 5i)

1. Disconnect ignition switch to coil lead at coil.
2. Disconnect coil to distributor leads at coil.
3. Remove 4 screws securing coil to side of engine and remove coil.

Installation (Fig. 5i)

1. Install coil to side of engine with 4 screws.
2. Connect coil to distributor leads at coil.
3. Connect ignition switch to coil lead at coil.

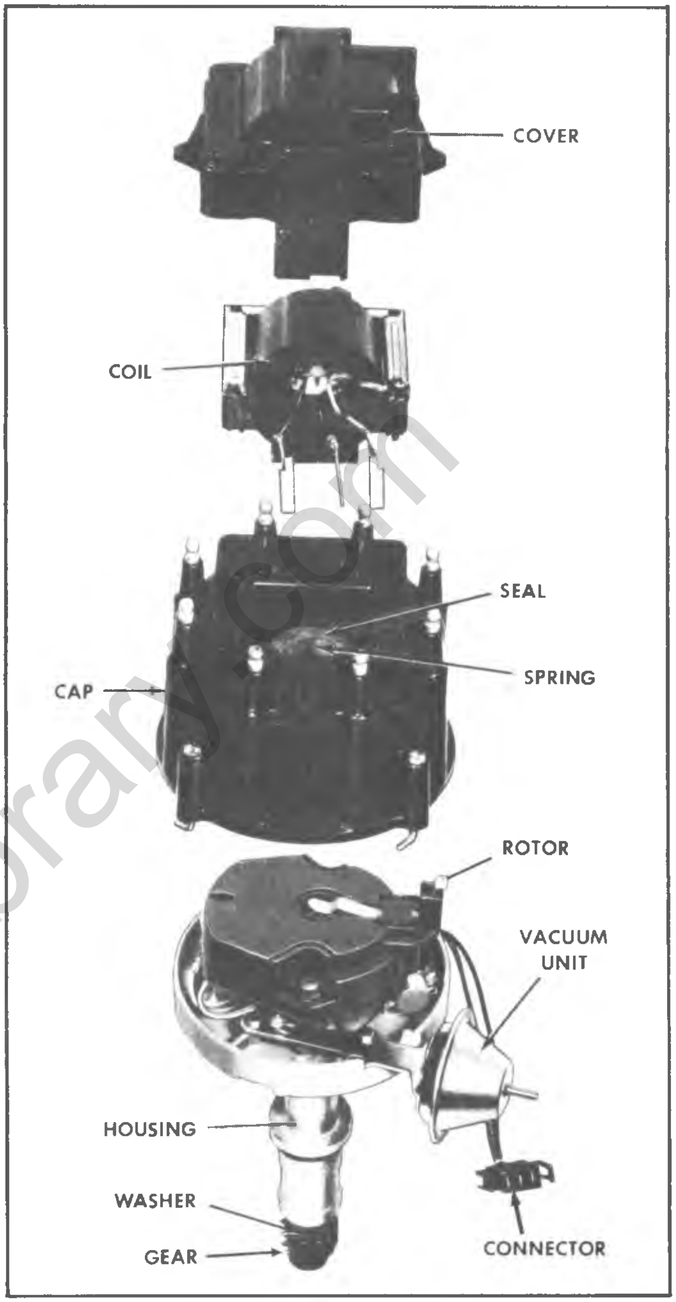


Fig. 10i—Exploded View of 8 Cylinder HEI Distributor

DIAGNOSIS

SPARK PLUG WIRE

1. Disconnect both ends of ignition cable being tested and clean terminals.
2. Set ohmmeter on high scale and connect ohmmeter to each end of cable being tested. Twist cable gently while observing ohmmeter.
3. If ohmmeter reads above 25,000 ohms or fluctuates from infinity to any value, replace cable being tested.
4. If the resistance of each cable is not within the following bands, replace the cable being tested.

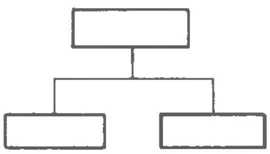
   0 to 15" Cable - 3000/10,000 ohms
   15 to 25" Cable - 4000/15,000 ohms
   25 to 35" Cable - 6000/20,000 ohms

HIGH ENERGY IGNITION SYSTEM

DIAGNOSIS CHARTS

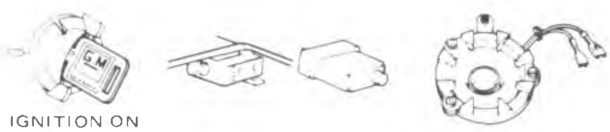
Introduction

This section presents a systematic method of diagnosing and troubleshooting the High Energy Ignition system. The charts you will be using are different from the ones you have used before. They arèn't "go—no go" decision trees or tables.

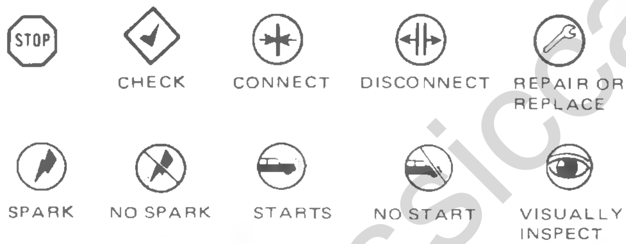


Condition	Possible Cause	Correction

Instead the new diagnosis and troubleshooting charts use pictures plus a few words to help you solve a problem,

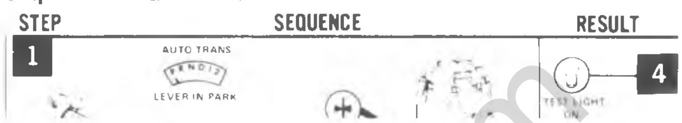


and symbols have replaced words.

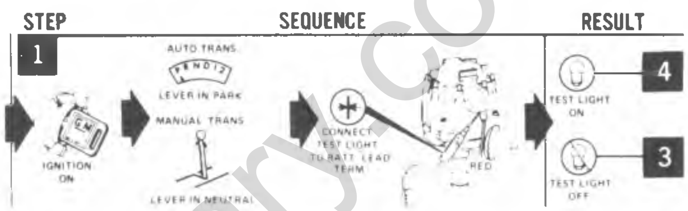


Using the Charts

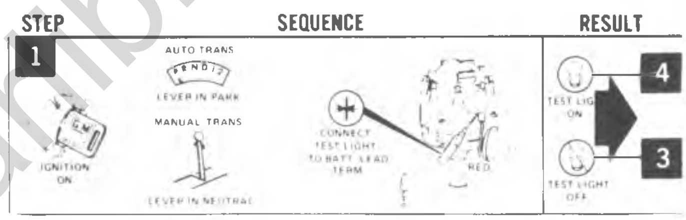
The charts are divided into three sections: step, sequence and result.



Always start at the first step and go through the complete sequence from left to right.

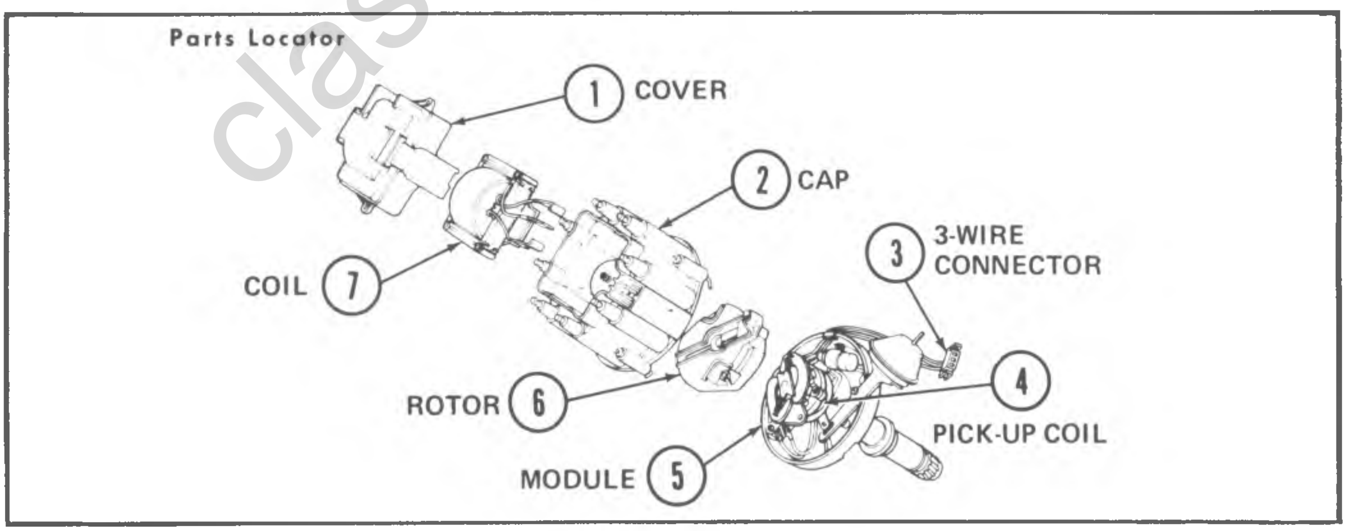


A sequence could be checking the battery lead terminal on the distributor. Each sequence ends with a result and tells you the next step to go to.

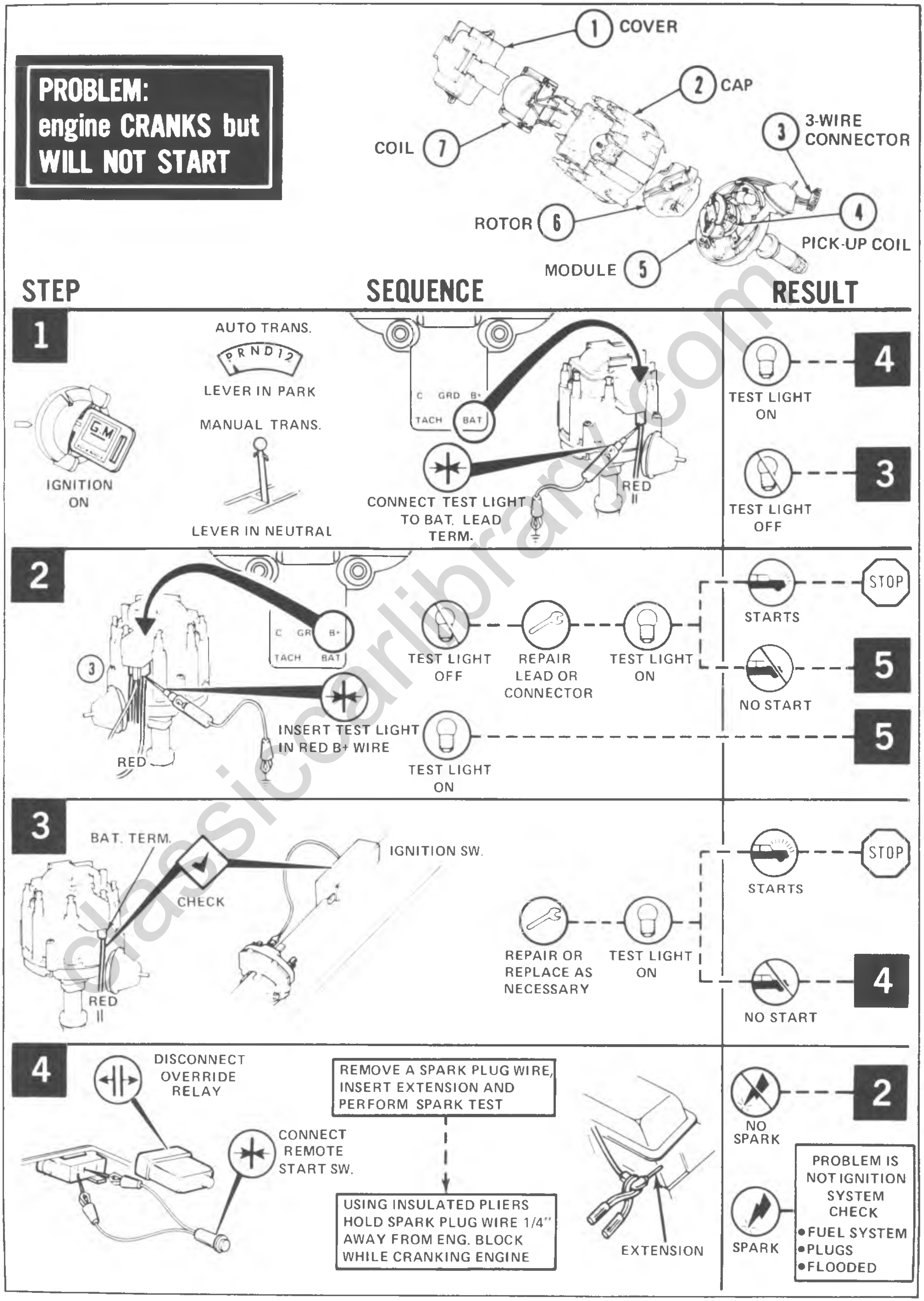


Work through each step of the diagnosis and troubleshooting charts till the system is repaired. STOP

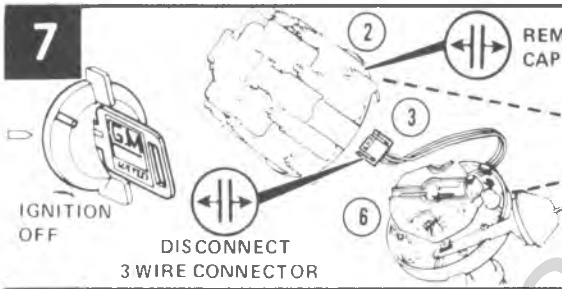
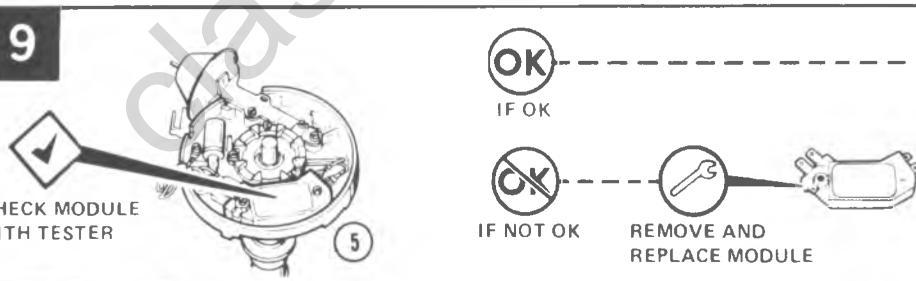
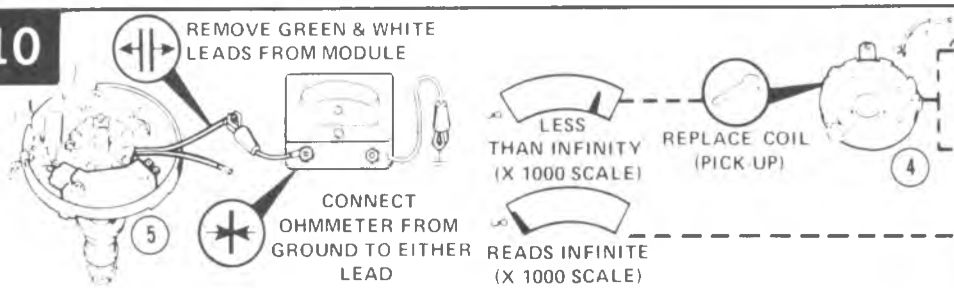
To find where parts are located in the system just look at the parts locator at the top of each chart.



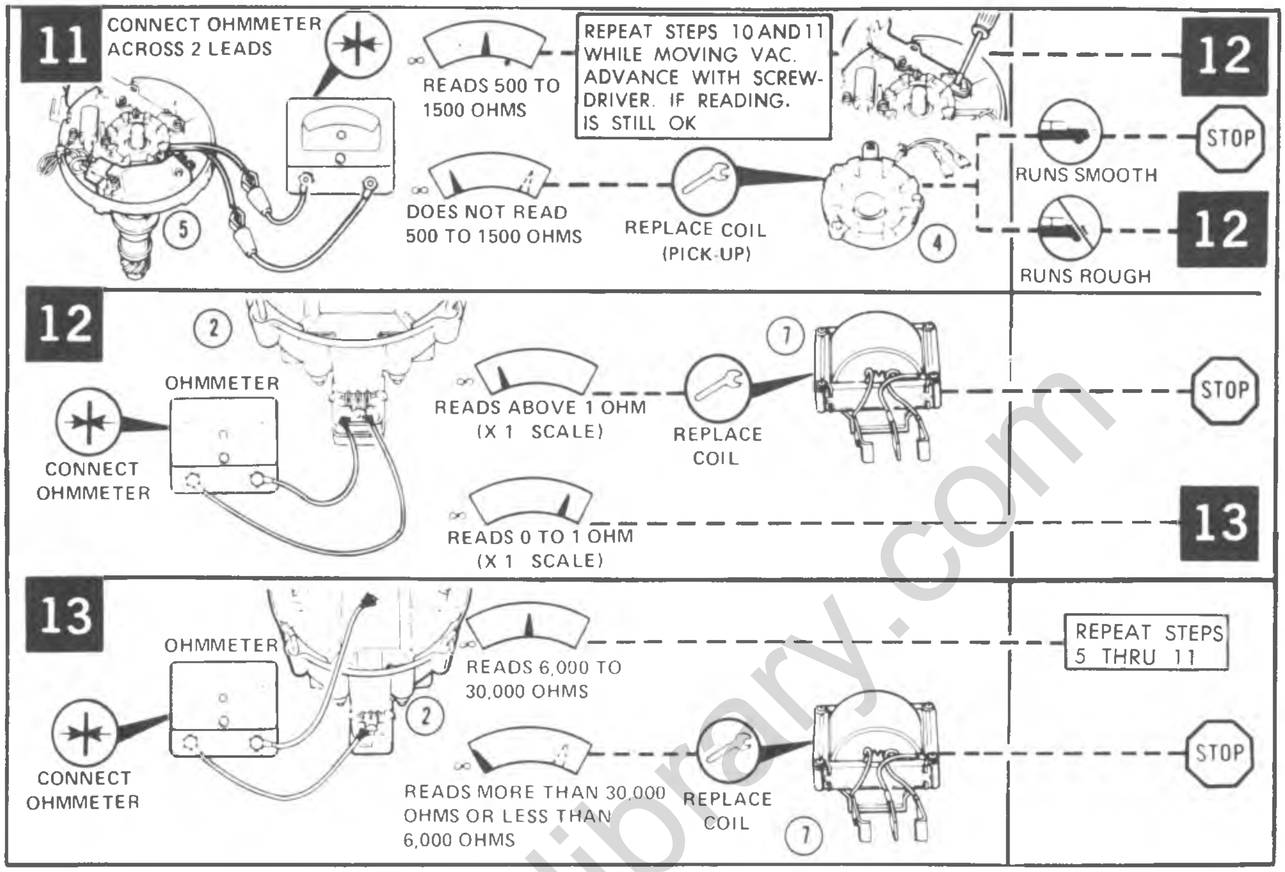
HIGH ENERGY IGNITION SYSTEM



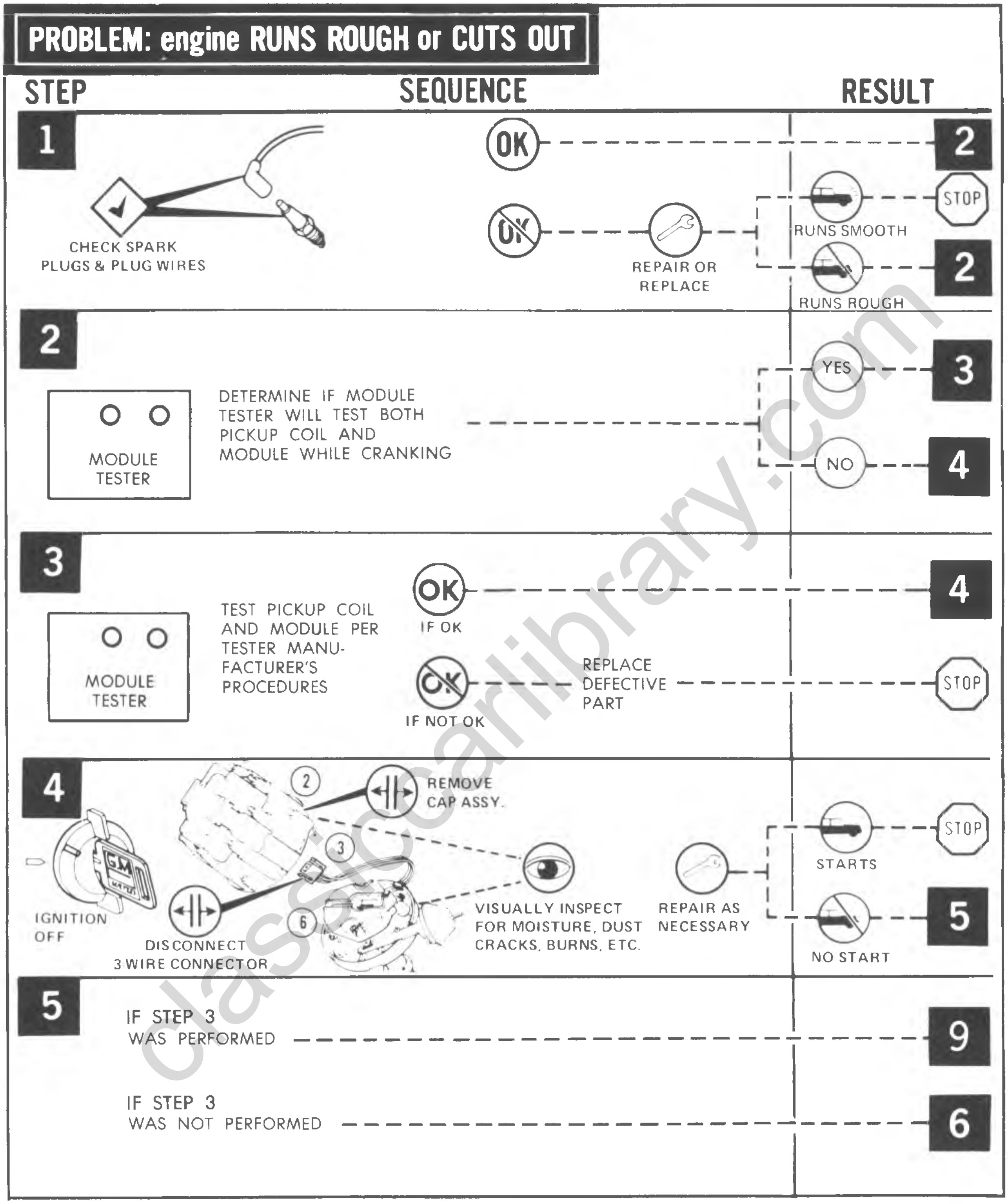
HIGH ENERGY IGNITION SYSTEM

STEP	SEQUENCE	RESULT
5	MODULE TESTER — DETERMINE IF MODULE TESTER WILL TEST BOTH PICKUP COIL AND MODULE WHILE CRANKING	YES → 6 NO → 7
6	MODULE TESTER — TEST PICKUP COIL AND MODULE PER TESTER MANUFACTURER'S PROCEDURES	OK IF OK → 7 IF NOT OK → REPLACE DEFECTIVE PART → STOP
7	 IGNITION OFF; DISCONNECT 3 WIRE CONNECTOR; REMOVE CAP ASSY.; VISUALLY INSPECT FOR MOISTURE, DUST CRACKS, BURNS, ETC.; REPAIR AS NECESSARY	STARTS → STOP NO START → 8
8	IF STEP 6 WAS PERFORMED	12
	IF STEP 6 WAS NOT PERFORMED	9
9	 CHECK MODULE WITH TESTER	OK IF OK → 10 IF NOT OK → REMOVE AND REPLACE MODULE → STOP
10	 REMOVE GREEN & WHITE LEADS FROM MODULE; CONNECT OHMMETER FROM GROUND TO EITHER LEAD LESS THAN INFINITY (X 1000 SCALE) → REPLACE COIL (PICK-UP) READS INFINITE (X 1000 SCALE)	STARTS → STOP NO START → 12 READS INFINITE → 11

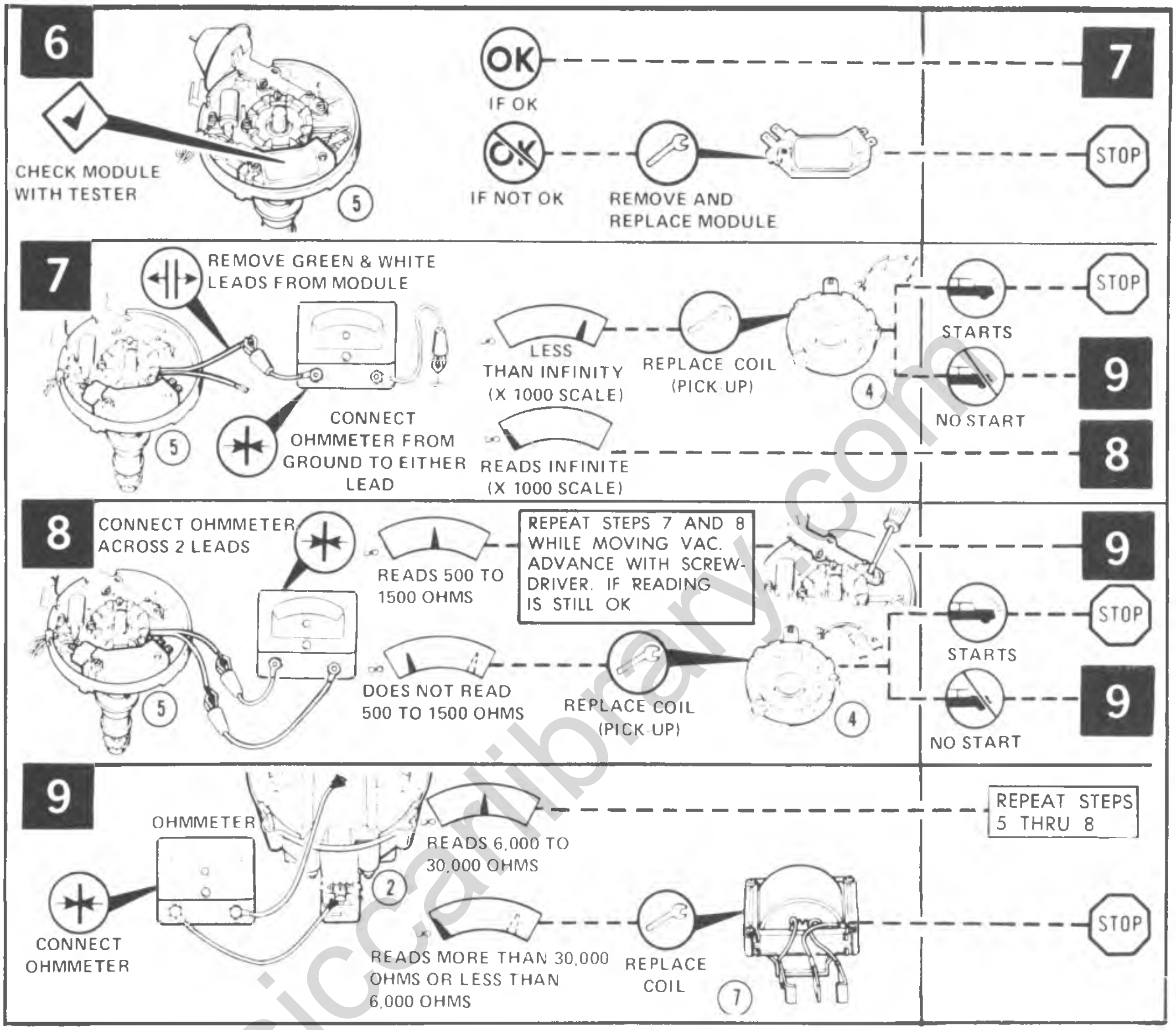
HIGH ENERGY IGNITION SYSTEM



HIGH ENERGY IGNITION SYSTEM



HIGH ENERGY IGNITION SYSTEM

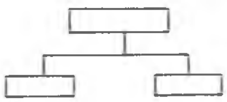


DIAGNOSIS CHARTS

DELCOTRON GENERATOR

Introduction

This section presents a systematic method of diagnosing and troubleshooting the Delcotron Generator system. The charts you will be using are different fro m the ones you have used before. They aren't "go—no go" decision trees or tables.



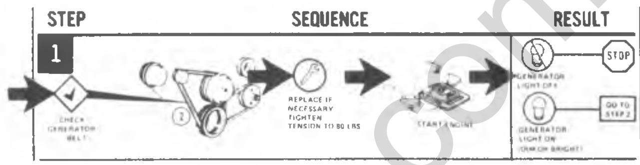
Instead the new diagnosis and troubleshooting charts use pictures plus a few words to help you solve a problem,

and symbols have replaced words.

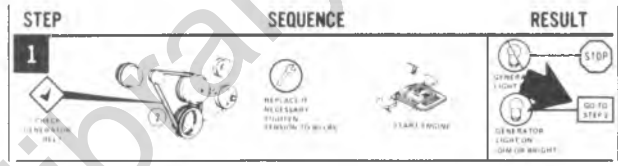
Using the Charts

The charts are divided into three sections: step, sequence and result.

Always start at the first step and go through the complete sequence from left to right.

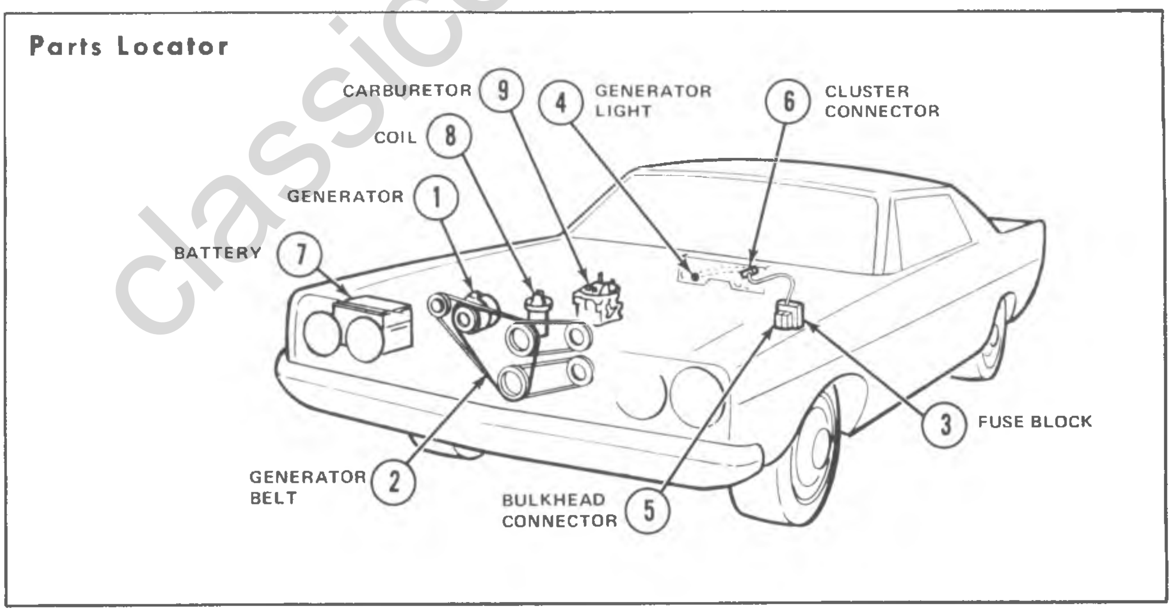


A sequence could be checking the generator belt and replacing if necessary. Each sequence ends with a result and tells you the next step to go to.



Work through each step of the diagnosis and troubleshooting charts till the system is repaired. STOP

To find where parts are located in the system just look at the parts locator at the top of each chart.



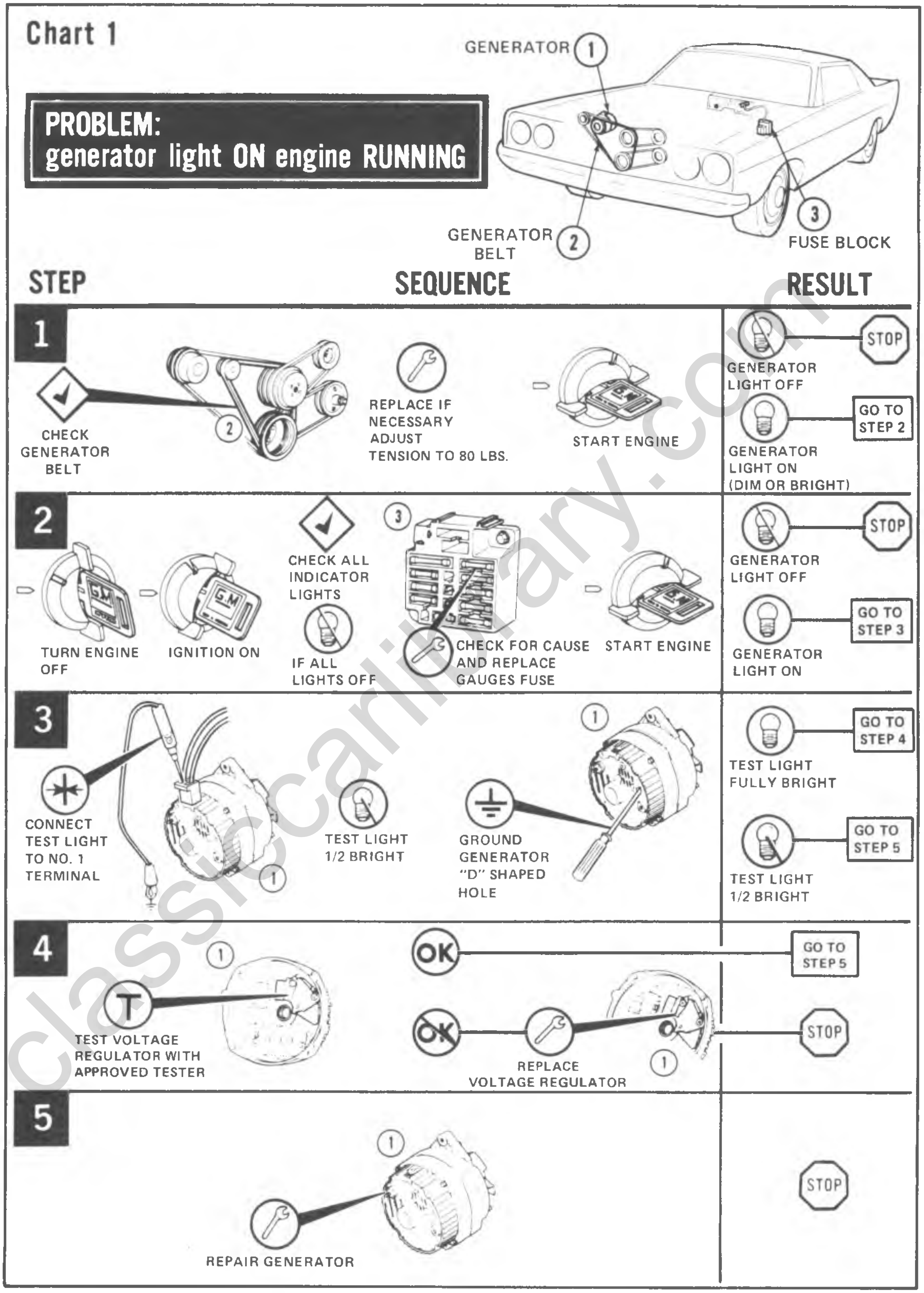


Chart 1
PROBLEM:
generator light ON engine RUNNING
GENERATOR 1
GENERATOR BELT 2
3 FUSE BLOCK
STEP
SEQUENCE
RESULT
1
CHECK GENERATOR BELT
2
REPLACE IF NECESSARY ADJUST TENSION TO 80 LBS.
START ENGINE
GENERATOR LIGHT OFF
STOP
GENERATOR LIGHT ON (DIM OR BRIGHT)
GO TO STEP 2
2
TURN ENGINE OFF
IGNITION ON
CHECK ALL INDICATOR LIGHTS
IF ALL LIGHTS OFF
3
CHECK FOR CAUSE AND REPLACE GAUGES FUSE
START ENGINE
GENERATOR LIGHT OFF
STOP
GENERATOR LIGHT ON
GO TO STEP 3
3
CONNECT TEST LIGHT TO NO. 1 TERMINAL
1
TEST LIGHT 1/2 BRIGHT
GROUND GENERATOR "D" SHAPED HOLE
1
TEST LIGHT FULLY BRIGHT
GO TO STEP 4
TEST LIGHT 1/2 BRIGHT
GO TO STEP 5
4
1
TEST VOLTAGE REGULATOR WITH APPROVED TESTER
OK
GO TO STEP 5
OK
REPLACE VOLTAGE REGULATOR
1
STOP
5
1
REPAIR GENERATOR
STOP

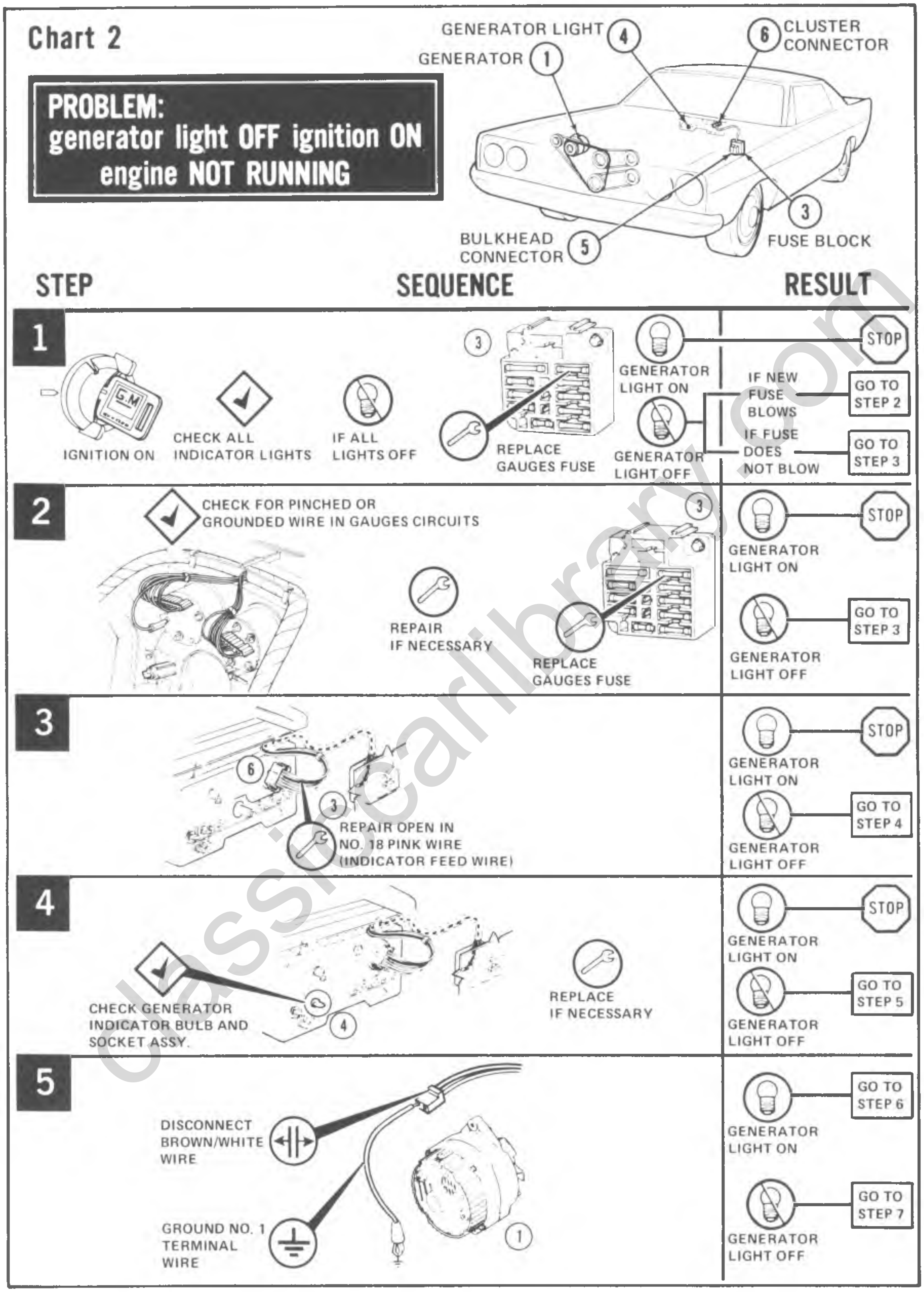


Chart 2
PROBLEM:
generator light OFF ignition ON
engine NOT RUNNING
GENERATOR LIGHT 4
GENERATOR 1
6 CLUSTER CONNECTOR
BULKHEAD CONNECTOR 5
3 FUSE BLOCK
STEP
SEQUENCE
RESULT
1
IGNITION ON
CHECK ALL INDICATOR LIGHTS
IF ALL LIGHTS OFF
3
REPLACE GAUGES FUSE
GENERATOR LIGHT ON
STOP
GENERATOR LIGHT OFF
IF NEW FUSE BLOWS
GO TO STEP 2
IF FUSE DOES NOT BLOW
GO TO STEP 3
2
CHECK FOR PINCHED OR GROUNDED WIRE IN GAUGES CIRCUITS
REPAIR IF NECESSARY
3
REPLACE GAUGES FUSE
GENERATOR LIGHT ON
STOP
GENERATOR LIGHT OFF
GO TO STEP 3
3
6
3
REPAIR OPEN IN NO. 18 PINK WIRE (INDICATOR FEED WIRE)
GENERATOR LIGHT ON
STOP
GENERATOR LIGHT OFF
GO TO STEP 4
4
CHECK GENERATOR INDICATOR BULB AND SOCKET ASSY.
4
REPLACE IF NECESSARY
GENERATOR LIGHT ON
STOP
GENERATOR LIGHT OFF
GO TO STEP 5
5
DISCONNECT BROWN/WHITE WIRE
GROUND NO. 1 TERMINAL WIRE
1
GENERATOR LIGHT ON
GO TO STEP 6
GENERATOR LIGHT OFF
GO TO STEP 7

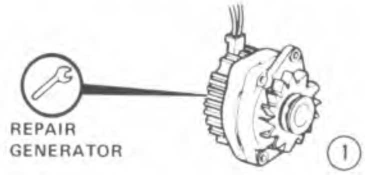
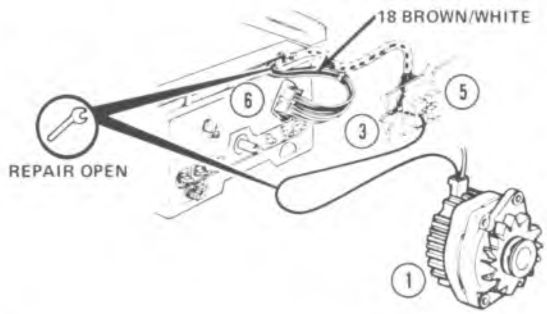
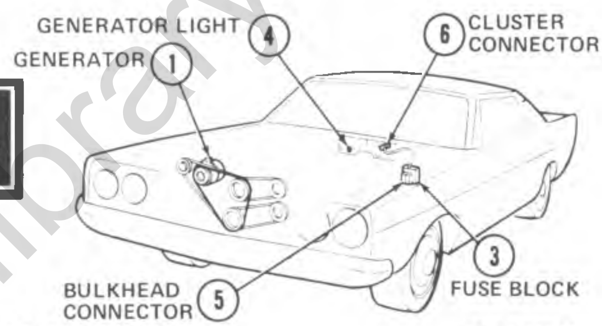
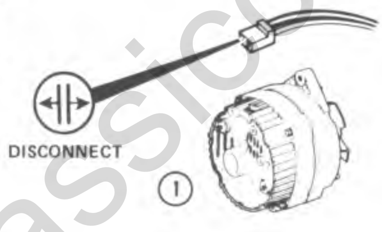
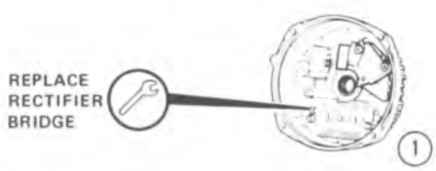
STEP	SEQUENCE	RESULT
6		STOP
7		STOP

Chart 3

PROBLEM:
generator light ON ignition OFF



STEP	SEQUENCE		RESULT
1		GENERATOR LIGHT ON — REPAIR SHORT BETWEEN NO. 1 (BROWN) WIRE AND NO. 2 (RED) WIRE	STOP
		GENERATOR LIGHT OFF	GO TO STEP 2
2			STOP

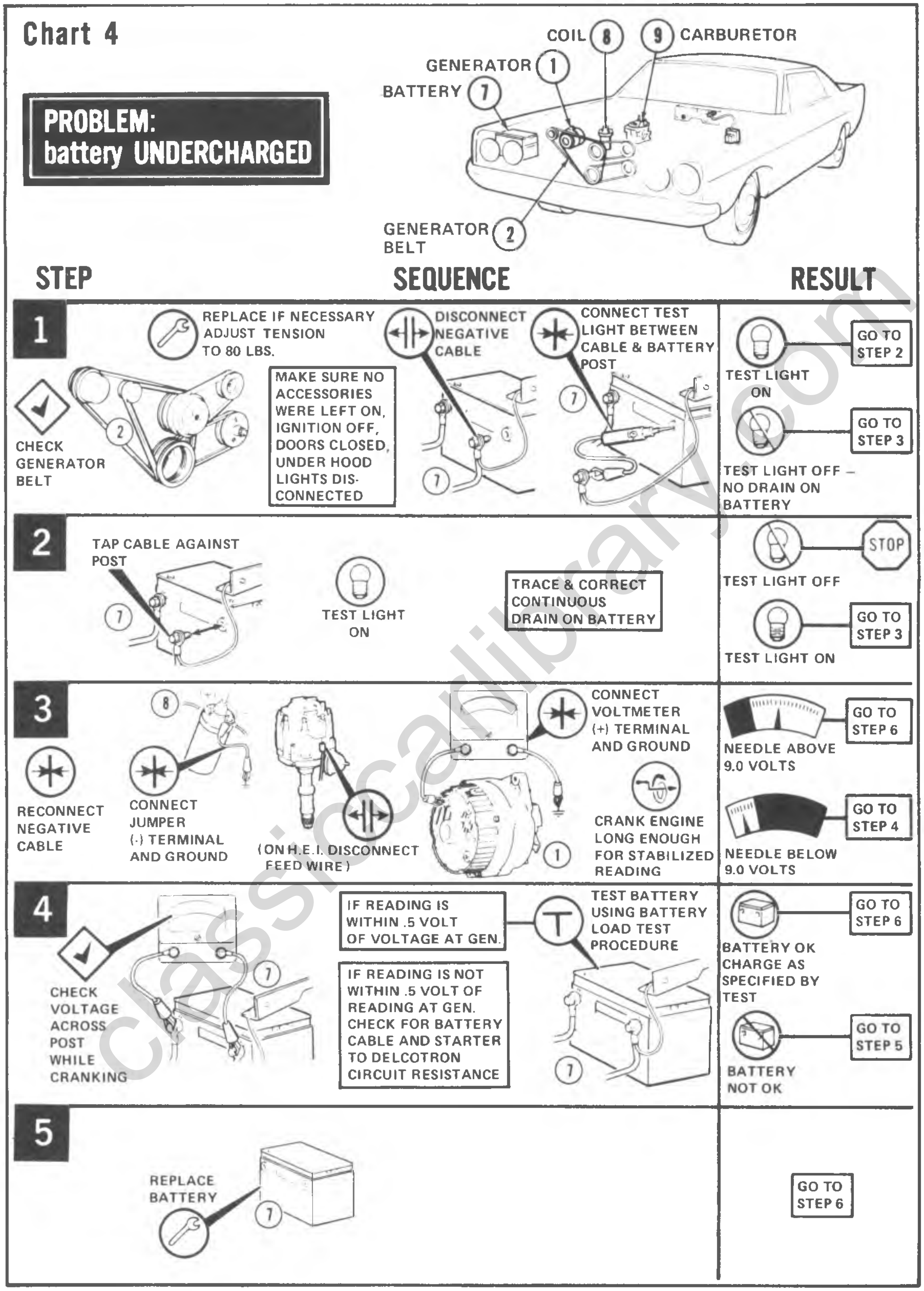
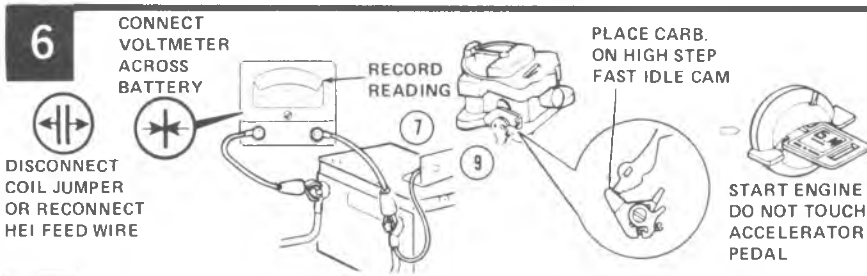
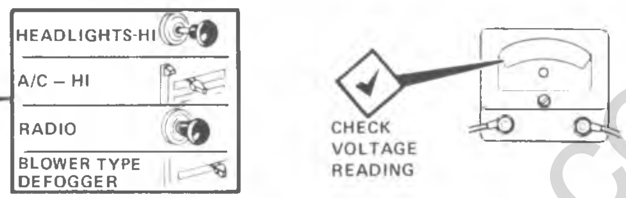
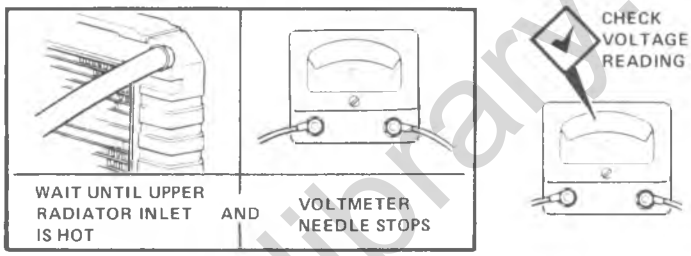
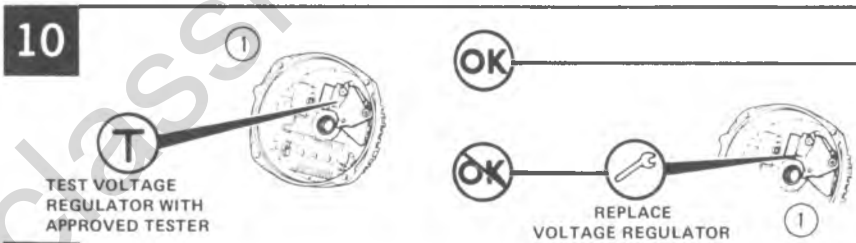
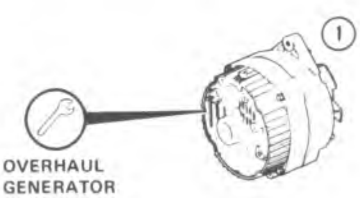


Chart 4
PROBLEM:
battery UNDERCHARGED
COIL 8
9 CARBURETOR
GENERATOR 1
BATTERY 7
GENERATOR BELT 2
STEP
SEQUENCE
RESULT
1
CHECK GENERATOR BELT
REPLACE IF NECESSARY ADJUST TENSION TO 80 LBS.
MAKE SURE NO ACCESSORIES WERE LEFT ON, IGNITION OFF, DOORS CLOSED, UNDER HOOD LIGHTS DISCONNECTED
DISCONNECT NEGATIVE CABLE
CONNECT TEST LIGHT BETWEEN CABLE & BATTERY POST
TEST LIGHT ON
GO TO STEP 2
TEST LIGHT OFF – NO DRAIN ON BATTERY
GO TO STEP 3
2
TAP CABLE AGAINST POST
TEST LIGHT ON
TRACE & CORRECT CONTINUOUS DRAIN ON BATTERY
TEST LIGHT OFF
STOP
TEST LIGHT ON
GO TO STEP 3
3
RECONNECT NEGATIVE CABLE
CONNECT JUMPER (-) TERMINAL AND GROUND
(ON H.E.I. DISCONNECT FEED WIRE)
CONNECT VOLTMETER (+) TERMINAL AND GROUND
CRANK ENGINE LONG ENOUGH FOR STABILIZED READING
NEEDLE ABOVE 9.0 VOLTS
GO TO STEP 6
NEEDLE BELOW 9.0 VOLTS
GO TO STEP 4
4
CHECK VOLTAGE ACROSS POST WHILE CRANKING
IF READING IS WITHIN .5 VOLT OF VOLTAGE AT GEN.
IF READING IS NOT WITHIN .5 VOLT OF READING AT GEN. CHECK FOR BATTERY CABLE AND STARTER TO DELCOTRON CIRCUIT RESISTANCE
TEST BATTERY USING BATTERY LOAD TEST PROCEDURE
BATTERY OK CHARGE AS SPECIFIED BY TEST
GO TO STEP 6
BATTERY NOT OK
GO TO STEP 5
5
REPLACE BATTERY
GO TO STEP 6

STEP	SEQUENCE	RESULT
6	 DISCONNECT COIL JUMPER OR RECONNECT HEI FEED WIRE; CONNECT VOLTMETER ACROSS BATTERY; RECORD READING (7) (9); PLACE CARB. ON HIGH STEP FAST IDLE CAM; START ENGINE DO NOT TOUCH ACCELERATOR PEDAL	GO TO STEP 7
7	 TURN ON ACCESSORIES: HEADLIGHTS-HI; A/C – HI; RADIO; BLOWER TYPE DEFOGGER; CHECK VOLTAGE READING	IF VOLTAGE READS LOWER THAN PREVIOUS READING — GO TO STEP 9 IF VOLTAGE READS HIGHER THAN PREVIOUS READING — GO TO STEP 8
8	 TURN OFF ACCESSORIES; WAIT UNTIL UPPER RADIATOR INLET IS HOT AND VOLTMETER NEEDLE STOPS; CHECK VOLTAGE READING	IF METER READS UNDER 12.5 — GO TO STEP 9 IF METER READS OVER 15.5 — GO TO STEP 10 IF METER READS 12.5 TO 15.5 SEE NOTE — STOP
9	 GROUND GENERATOR (1); CHECK VOLTAGE READING	IF VOLTAGE READS HIGHER THAN PREVIOUS READING — GO TO STEP 10 IF VOLTAGE READS LOWER THAN PREVIOUS READING — GO TO STEP 11
10	 TEST VOLTAGE REGULATOR WITH APPROVED TESTER (1); OK — GO TO STEP 11; NOT OK — REPLACE VOLTAGE REGULATOR (1)	GO TO STEP 11 STOP
11	 OVERHAUL GENERATOR (1)	STOP

NOTE: IF NOTHING HAS BEEN FOUND RE-EDUCATE OWNER ON EXCESSIVE IDLING, SLOW OR SHORT DISTANCE DRIVING WITH ALL ACCESSORIES ON.

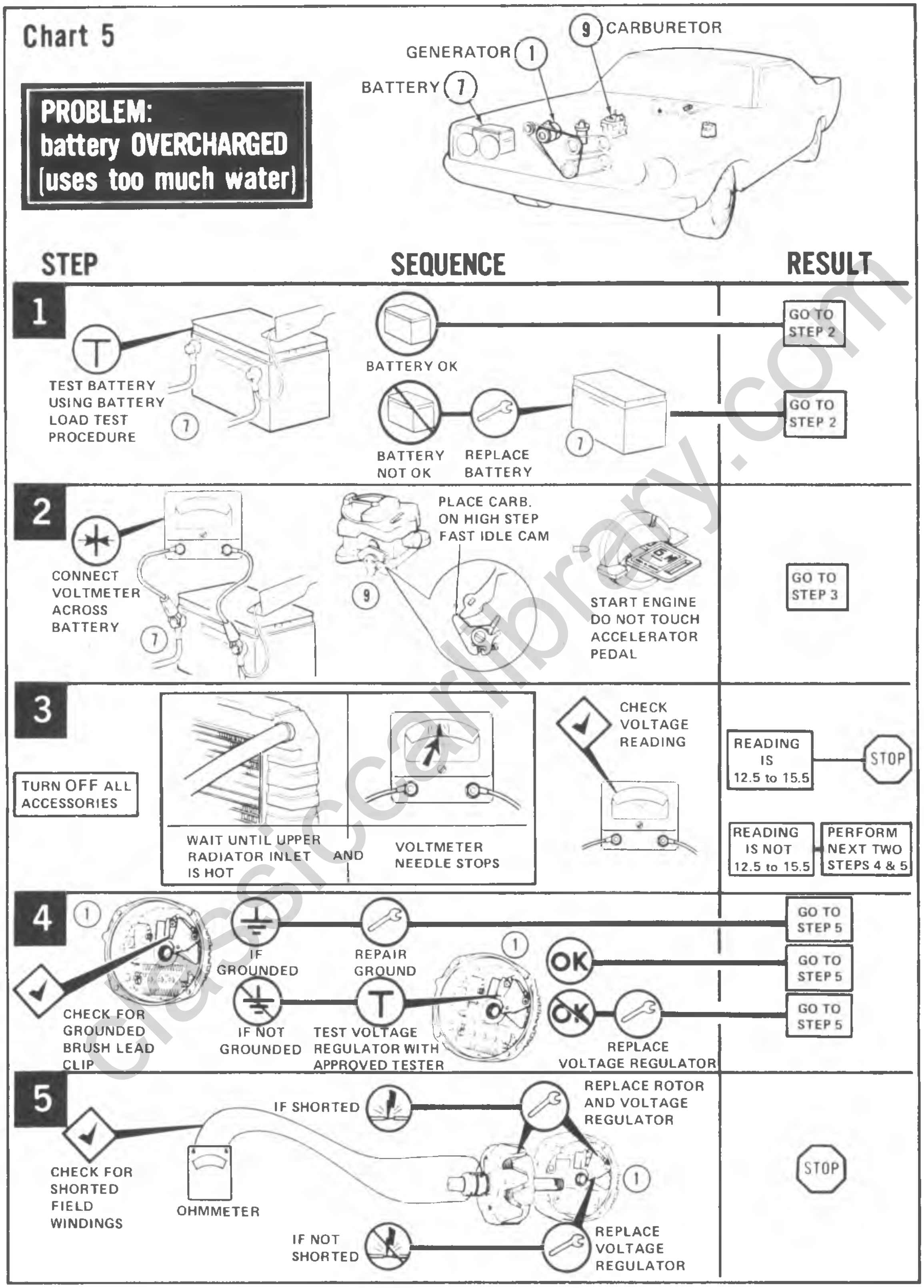


Chart 5
PROBLEM:
battery OVERCHARGED
(uses too much water)
GENERATOR 1
BATTERY 7
9 CARBURETOR
STEP
SEQUENCE
RESULT
1
TEST BATTERY USING BATTERY LOAD TEST PROCEDURE
7
BATTERY OK
GO TO STEP 2
BATTERY NOT OK
REPLACE BATTERY
7
GO TO STEP 2
2
CONNECT VOLTMETER ACROSS BATTERY
7
9
PLACE CARB. ON HIGH STEP FAST IDLE CAM
START ENGINE DO NOT TOUCH ACCELERATOR PEDAL
GO TO STEP 3
3
TURN OFF ALL ACCESSORIES
WAIT UNTIL UPPER RADIATOR INLET IS HOT
AND
VOLTMETER NEEDLE STOPS
CHECK VOLTAGE READING
READING IS 12.5 to 15.5
STOP
READING IS NOT 12.5 to 15.5
PERFORM NEXT TWO STEPS 4 & 5
4
1
CHECK FOR GROUNDED BRUSH LEAD CLIP
IF GROUNDED
REPAIR GROUND
GO TO STEP 5
IF NOT GROUNDED
TEST VOLTAGE REGULATOR WITH APPROVED TESTER
1
OK
GO TO STEP 5
OK
REPLACE VOLTAGE REGULATOR
GO TO STEP 5
5
CHECK FOR SHORTED FIELD WINDINGS
OHMMETER
IF SHORTED
REPLACE ROTOR AND VOLTAGE REGULATOR
1
IF NOT SHORTED
REPLACE VOLTAGE REGULATOR
STOP

SECTION 7A

AUTOMATIC TRANSMISSION

CONTENTS OF THIS SECTION

TURBO HYDRA-MATIC 350 TRANSMISSION

INDEX

GENERAL DESCRIPTION

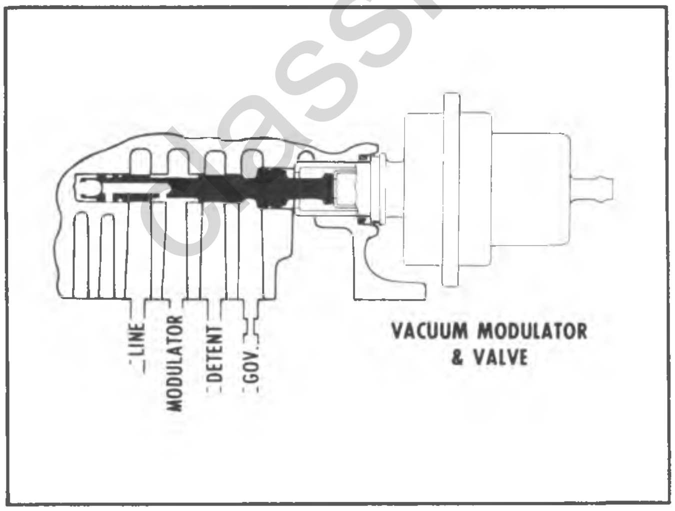


Fig. 1G—Vacuum Modulator Assembly

VACUUM MODULATOR ASSEMBLY (FIG. 1G)

The engine vacuum signal is provided by the vacuum modulator, which consists of a diaphragm and one spring. The external spring applies a force which acts on the modulator valve. This force acts on the modulator valve so that it increases modulator pressure. Engine vacuum acts in the opposite direction to decrease modulator, or low engine vacuum, high modulator pressure. High engine vacuum, and low modulator pressure.

MAINTENANCE AND ADJUSTMENTS

TRANSMISSION FLUID

Draining and Refilling Transmission

The oil pan should be drained and the strainer cleaned every 30,000 miles and fresh fluid added to obtain the proper lever on indicator. For vehicles subjected to heavy city traffic during hot weather, or in commercial use, when the engine is regularly idled for prolonged periods or when vehicle is used for towing the oil pan should be drained and the strainer cleaned every 15,000 miles.

Drain fluid immediately after operation before it has had an opportunity to cool.

> **WARNING: Transmission fluid temperature can exceed 350°F.**

SHIFT CONTROLS

COLUMN SHIFT LINKAGE - G SERIES (FIG. 2G)

1. The shift tube and lever assembly must be free in the mast jacket.
2. Set transmission lever (C) in "neutral" position by one of the following optional methods.

   NOTE: Obtain "neutral" position by moving transmission lever (C) counter-clockwise to "L1" detent, then clockwise three detent positions to "neutral" or obtain "neutral" position by moving transmission lever (C) clockwise to the "park" detent then counter-clockwise two detents to "neutral".

3. Set the column shift lever in "neutral" position. This is obtained by rotating shift lever until it locks into mechanical stop in the column assembly.

   NOTE: Do not use indicator pointer as a reference to position the shift lever.

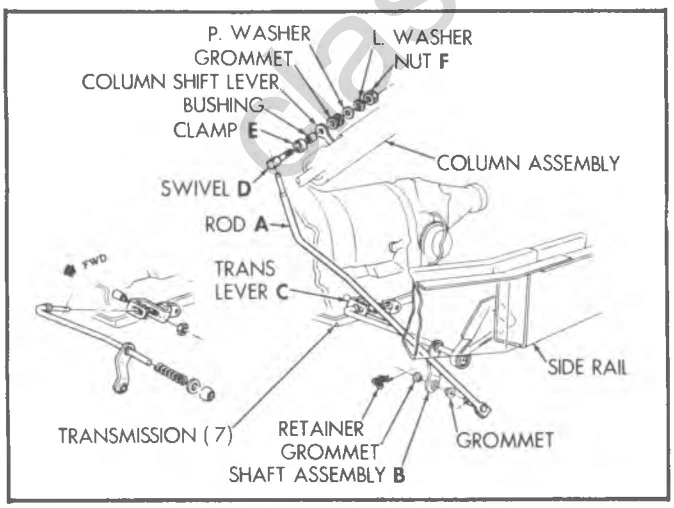


Fig. 2G—Column Shift Linkage - G Series

4. Attach rod (A) to shaft assembly (B) as shown (fig. 2G).
5. Slide swivel (D) and clamp (E) onto rod (A) align the column shift lever and loosely attach as shown.
6. Hold column lever against "neutral" stop "park" position side.
7. Tighten nut (F) to 18 foot pounds.
8. Readjust indicator needle if necessary to agree with the transmission detent positions.
9. Readjust neutral start switch if necessary to provide the correct relationship to the transmission detent positions.

   CAUTION: *Any inaccuracies in the above adjustments may result in premature failure of the transmission due to operation without controls in full detent. Such operation results in reduced oil pressure and in turn partial engagement of the affected clutches. Partial engagement of the clutches with sufficient pressure to cause apparent normal operation of the vehicle will result in failure of the clutches or other internal parts after only a few miles of operation.*

DETENT DOWNSHIFT CABLE (FIGS. 3G and 4G)

Removal

1. Push up on bottom of snap-lock and release lock and detent downshift cable.
2. Compress locking tabs and disconnect snap-lock assembly from bracket.
3. Disconnect cable from carburetor lever.
4. Remove clamp around filler tube, remove screw and washer securing cable to transmission and disconnect detent downshift cable.

Installation

1. Install new seal on detent downshift cable lubricant seal with transmission fluid.
2. Connect transmission end of detent downshift cable and secure to transmission case with bolt and washer tightened to 75 inch pounds.
3. Route cable in front of filler tube and install clamp around filler tube, modulator pipe and detent

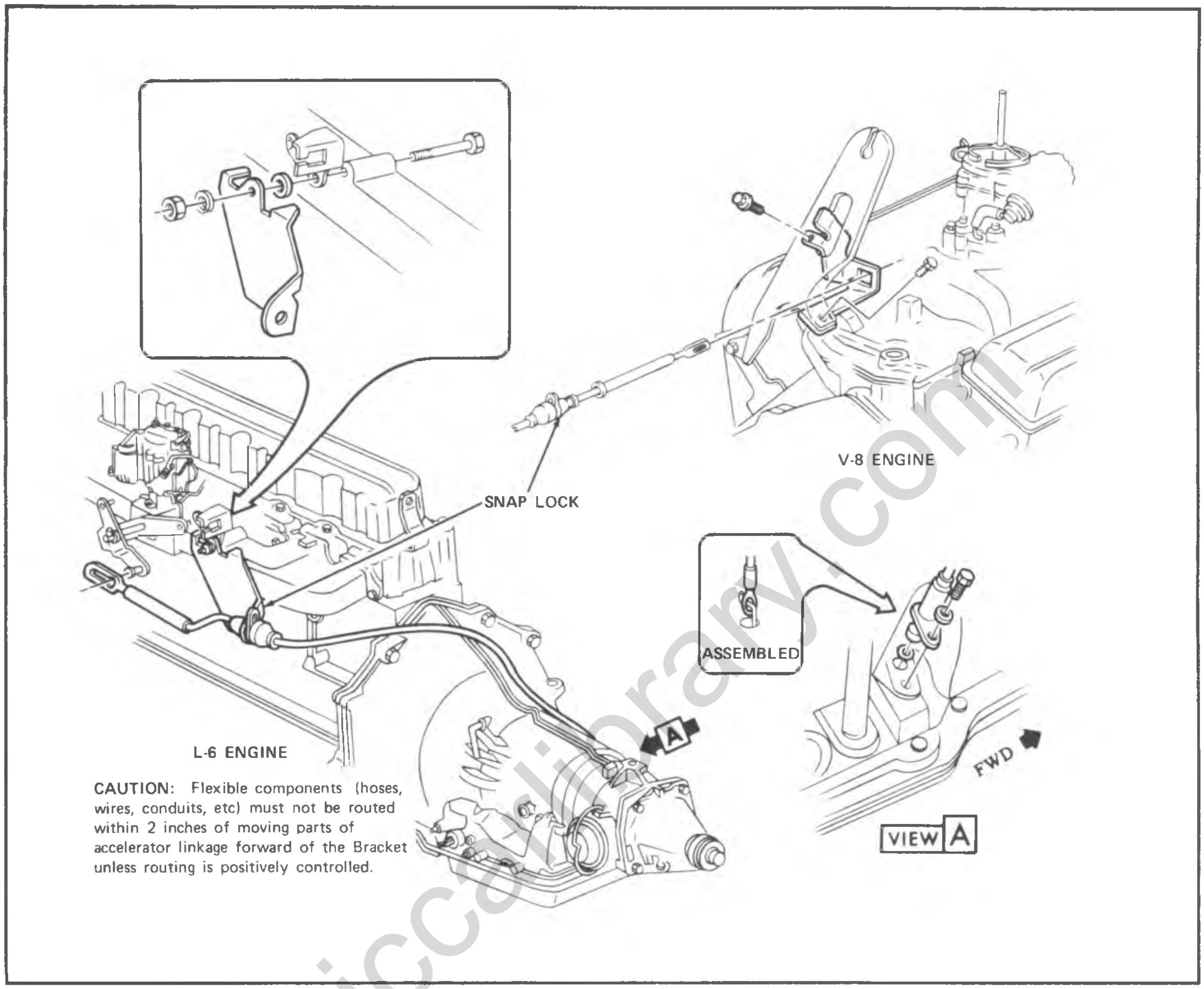


Fig. 3G—Detent Downshift Cable - G Series

downshift cable. Locate clamp approximately 2 inches above filler tube bracket.

4. Pass cable through bracket and engage locking tabs of snap-lock on bracket.
5. Connect cable to carburetor lever.

Adjustment

With snap-lock disengaged, position carburetor to wide open throttle (W.O.T.) position and push snap-lock downward until top is flush with rest of cable.

MANUAL SHAFT, RANGE SELECTOR INNER LEVER AND PARKING LINKAGE ASSEMBLIES

The procedure for removal and installation remains the same with the addition of this notation:

NOTE: Before installing the propeller shaft, liberally lubricate splines of the transmission yoke with a Lithium soap base lubricant. The lubricant should seep from the vent hole (rear cap of yoke) when installing yoke on transmission output shaft. It is essential that the vent hole is not obstructed.

TRANSMISSION REPLACEMENT

The procedure for transmission replacement remains the same with the addition of this note:

NOTE: If necessary, the catalytic converter may have to be disconnected to provide adequate clearance for transmission removal. This procedure will include removal of the converter support bracket.

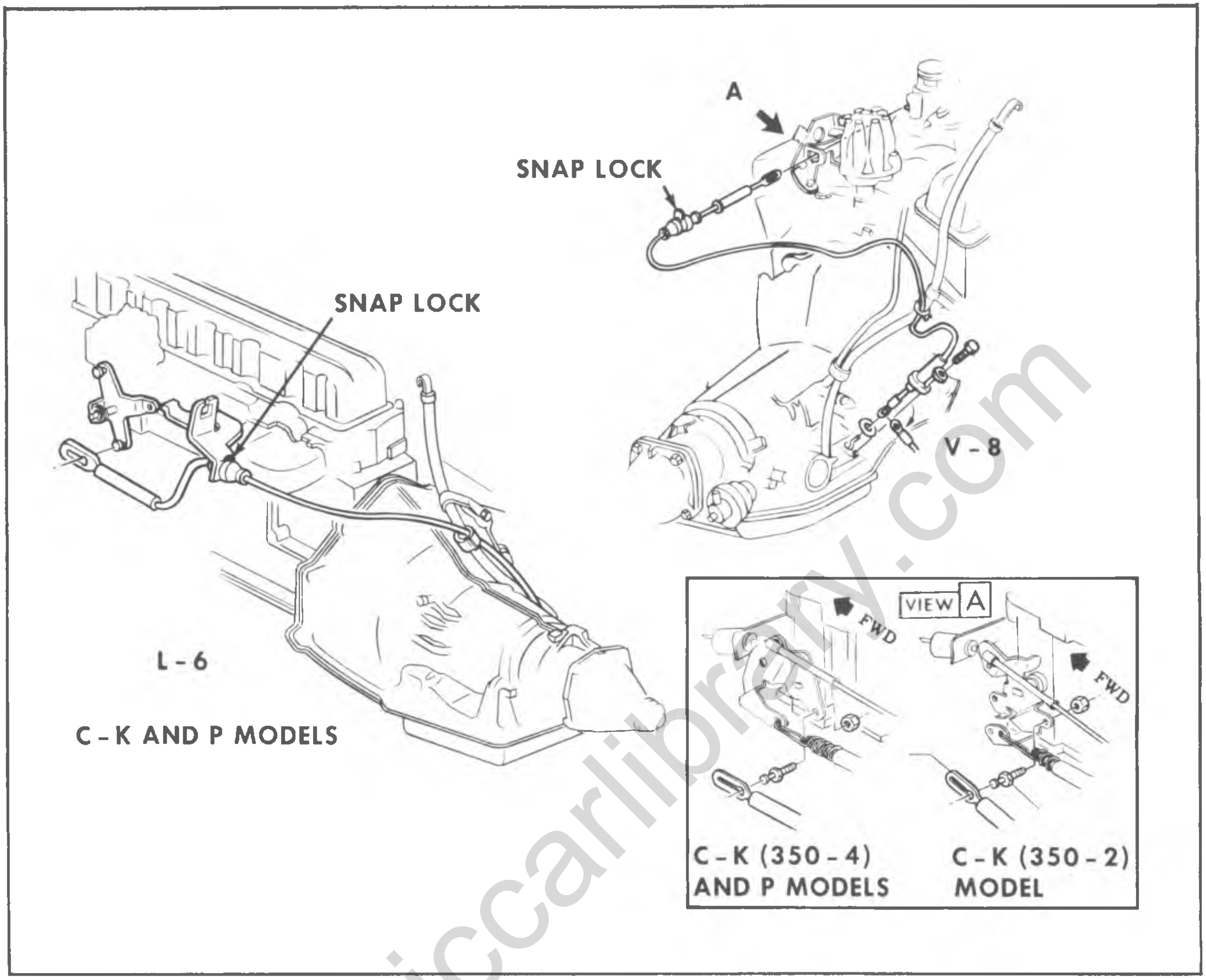


Fig. 4G—Detent Downshift Cable - C-K and P Series

DIAGNOSIS

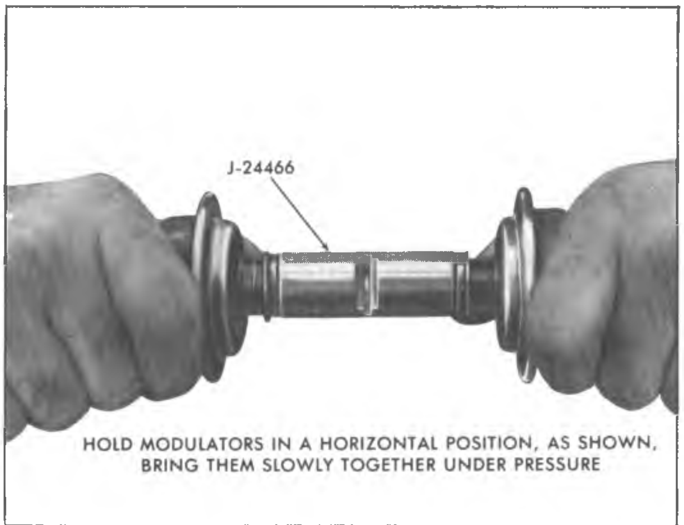


Fig. 5G—Spring Tension Comparison

OIL PRESSURE CHECK

While vehicle is stationary (service brake on), engine speed set to 1200 rpm, transmission oil pressure gauge attached, and vacuum modulator tube disconnected, the transmission to line pressure tap should read 167 psi in drive, 166 psi in L1 or L2, and 254 psi in reverse for the 350 V-8.

While vehicle is stationary (service brake on), engine speed set to maintain 12 inches hg. absolute manifold pressure, transmission oil pressure gauge attached, and vacuum modulator tube connected, the transmission should read 85 psi in drive, 105 psi in L1 or L2, and 129 psi in reverse for the 350 V-8.

SPRING TENSION COMPARISON CHECK

Using tool J-2466, as shown in Figure 5G, compare the load of a known good modulator with the assembly in question.

a. Install the modulator that is known to be acceptable on either end of the tool.

b. Install the modulator in question on the opposite end of the tool.

c. Holding the modulators in a horizontal position, bring them together under pressure until either modulator sleeve just touches the tool. The indicator in the gage will show white if the modulator is acceptable. A non-conforming modulator will cause the indicator to shift, thus showing blue. If white does not appear, the modulator in question should be replaced.

TURBO HYDRA-MATIC 400/475 TRANSMISSION

INDEX

MAINTENANCE AND ADJUSTMENTS

TRANSMISSION FLUID

Draining and Refilling Transmission

The oil pan should be drained and filter replaced every 30,000 miles and fresh fluid added to obtain the proper level on indicator. For vehicles subjected to heavy city traffic during hot weather, or in commercial use, when the engine is regularly idled for prolonged periods or when vehicle is used for towing, oil pan should be drained and filter replaced every 15,000 miles.

Drain fluid immediately after operation before it has had an opportunity to cool.

WARNING: Transmission fluid temperature can exceed 350°F.

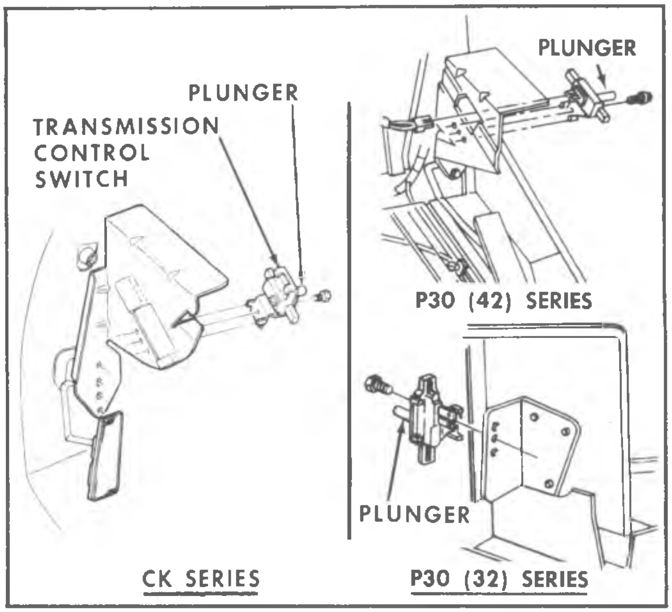


Fig. 1L—Detent Downshift Switch

DETENT DOWNSHIFT SWITCH

1. Install switch as shown in Figure 1L.
2. After installing the switch, press the switch plunger as far forward as possible. This presets the switch for adjustment. The switch will then adjust itself with the first idle open throttle application of the accelerator pedal.

REAR SEAL

Removal

1. Remove propeller shaft.
2. Pry seal out with screw driver.

Installation-
All Models Except CL

1. Use a non-hardening sealer on outside of seal body; and using Tool J-21359, drive seal in place.
2. Re-install propeller shaft.

Model CL

1. Use a non-hardening sealer on outside of seal body; and using Tool J-24057 drive seal in place.
2. Re-install propeller shaft.

TRANSMISSION REPLACEMENT

The procedure for transmission replacement remains the same with the addition of this note:

NOTE: If necessary, the catalytic converter may have to be disconnected to provide adequate clearance for transmission removal. This procedure will include removal of the converter support bracket.

SECTION 7M

CLUTCHES & MANUAL TRANSMISSIONS

CONTENTS OF THIS SECTION

CLUTCH CONTROLS

INDEX

GENERAL DESCRIPTION

The clutch operating controls for "G" models (fig. 1T) are a mechanical type consisting of a pendant type pedal, return spring, pedal pull rod, cross-shaft, fork push rod, clutch fork and throwout bearing. The pedal pull rod is routed vertically from the clutch pedal lever down through the toe panel to the cross shaft. When the pedal is depressed, the pedal pull rod moves rotating the cross shaft, pushing the clutch fork rod rearward and pivoting the clutch fork. This action moves the throwout bearing against the clutch release fingers, releasing the clutch.

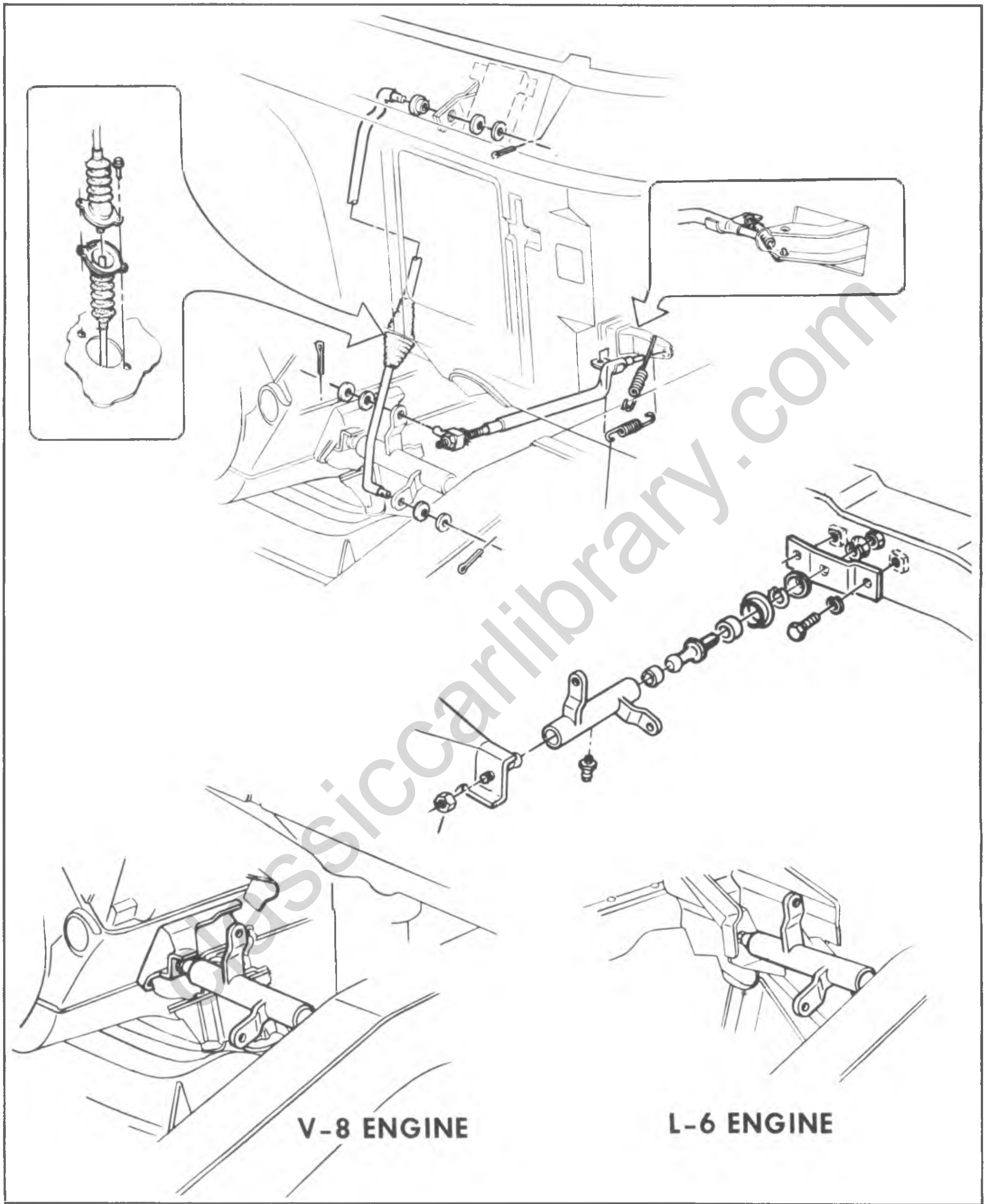


Fig. 1T—Clutch Linkage Assembly - G Models

MANUAL TRANSMISSIONS

INDEX

SERVICE OPERATIONS

TRANSFER CASE REPLACEMENT (Figs. 1Q-3Q)

Removal

1. Raise and support vehicle on hoist. Drain transfer case.
2. Disconnect speedometer cable, back-up lamp and TCS switch.
3. Remove skid plate and crossmember supports as necessary.
4. Disconnect rear prop shaft from transfer case and tie up away from work area.
5. Disconnect front prop shaft from transfer case and tie up shaft away from work area.
6. Disconnect shift lever rod from shift rail link. On full time 4 wheel drive models, disconnect shift levers at transfer case.
7. Remove transfer case to frame mounting bracket bolts.
8. Support transfer case and remove bolts attaching transfer case to transmission adapter.
9. Move transfer case to rear until input shaft clears adapter and lower assembly from vehicle.

Installation

1. Support transfer case in suitable stand and position case to transmission adapter. Install bolts attaching case to adapter and torque to 45 ft. lbs.
2. Remove stand as required and install bolts attaching transfer case to frame rail. Bend lock tabs after assembly.
3. Install connecting rod to shift rail link or connect shift levers to transfer case, as applicable.
4. Connect front prop shaft to transfer case front output shaft.
5. Connect rear prop shaft to transfer case rear output shaft.
6. Install crossmember support and skid plate, if removed.
7. Connect speedometer cable, back-up lamp and TCS switch.
8. Fill transfer case to proper level with lubricant specified in the lubricant section of the Truck Chassis Service Manual.
9. Lower and remove vehicle from hoist.

CAUTION: *Check and tighten all bolts to specified torques.*

NOTE: Before connecting prop shafts to companion flanges be sure locknuts are torqued to specifications.

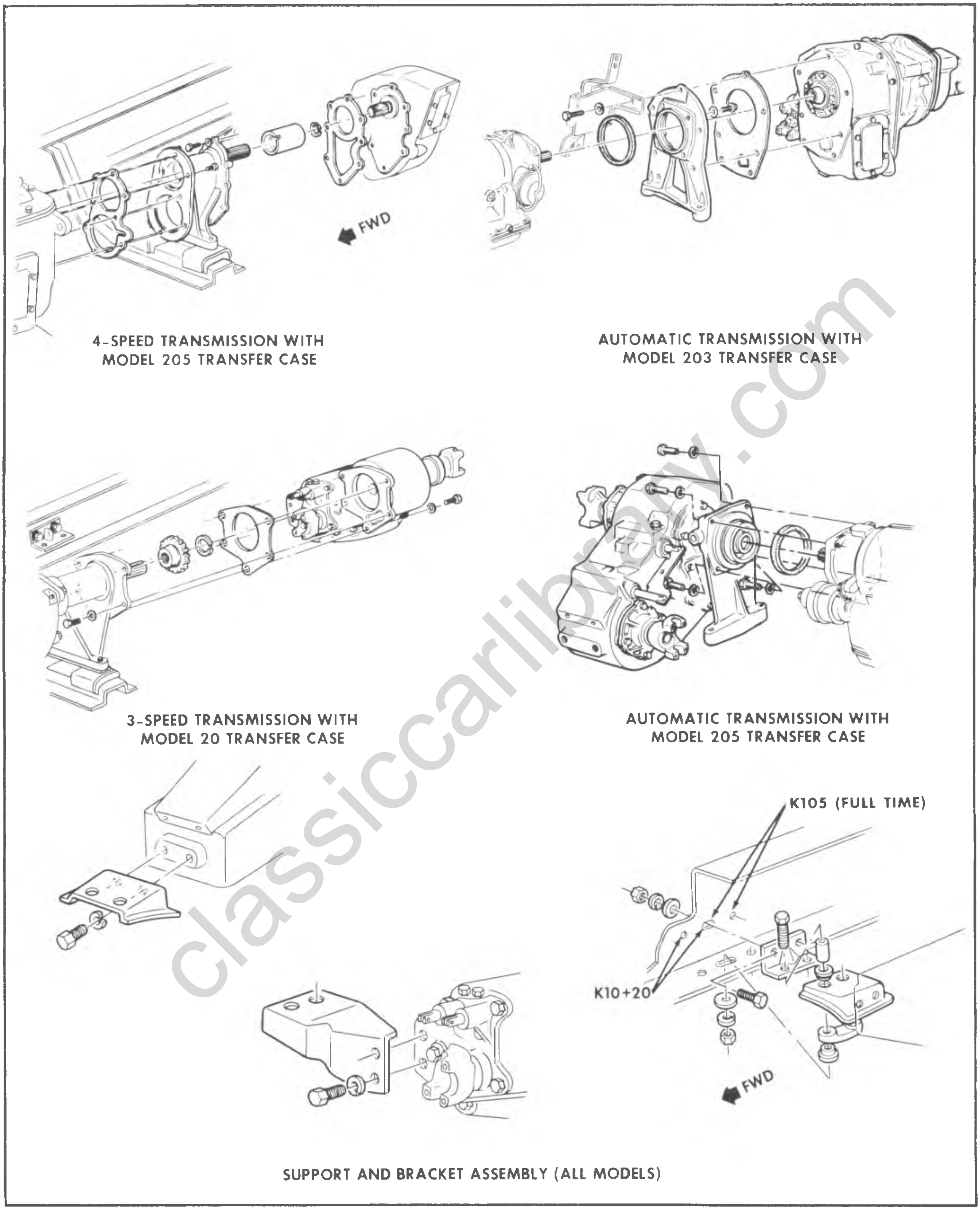


Fig. 1Q—Transfer Case Installation

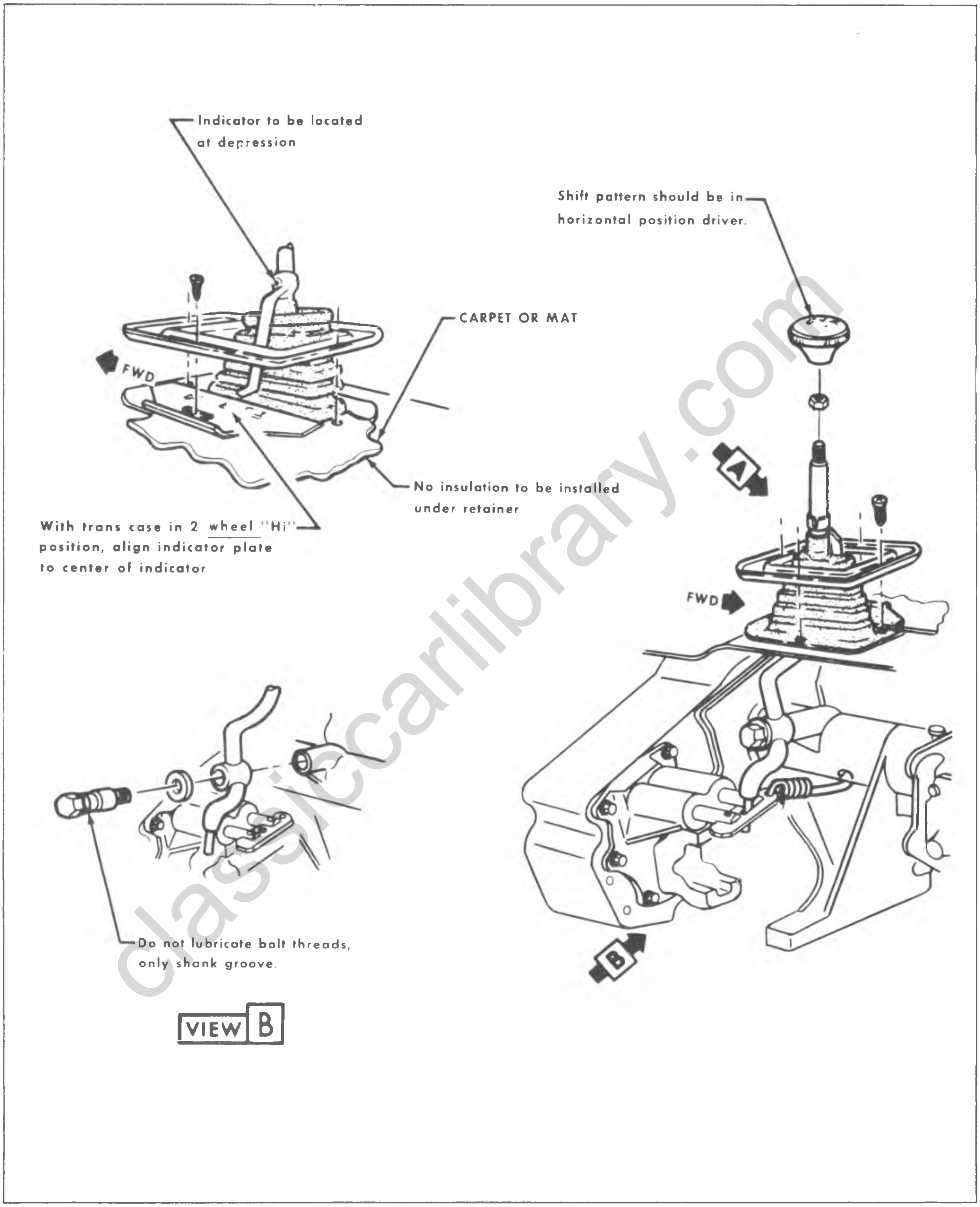


Fig. 2Q—Model 20 Transfer Case Controls

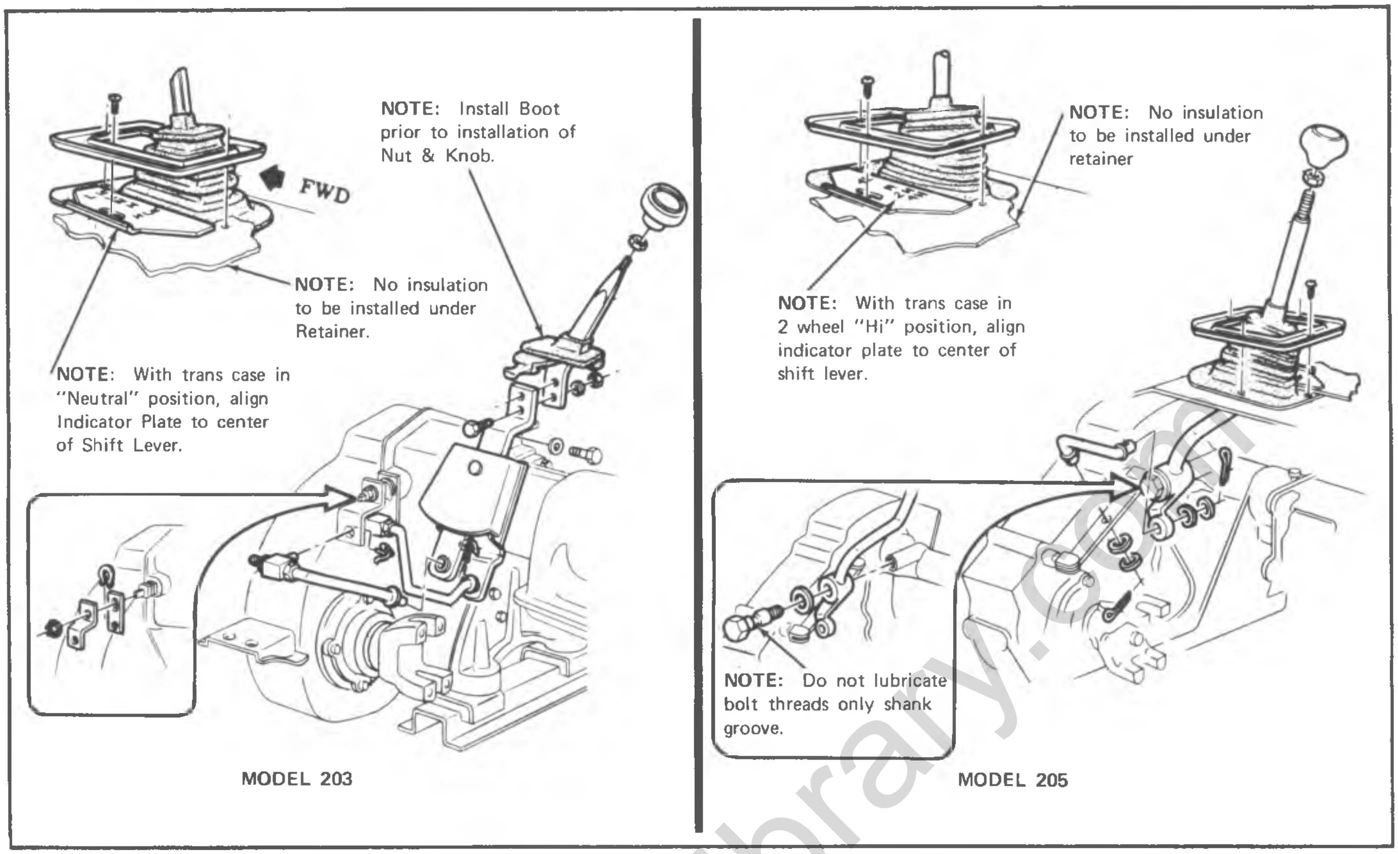


Fig. 3Q—Transfer Case Controls

SECTION 8

FUEL TANK AND EXHAUST SYSTEM

CONTENTS OF THIS SECTION

FUEL TANK

Refer to the 1974 Light Duty Truck Service Manual for servicing of the fuel tank, fuel line and evaporation control system with the following exception:

COMPONENT PART REPLACEMENT

P MODELS AND 1 TON CHASSIS (FRAME) MOUNTED TANKS

Refer to the 1974 Service Manual for 30 gallon fuel tank mounted on a P20 or P30 model. Refer to Figure 1 for a 50 gallon fuel tank mounted on a P30 model.

Removal and Installation

1. Drain tank.
2. Remove filler neck.
3. Disconnect gauge unit fuel line and wiring. Ignition switch must be in OFF position.
4. Remove bolts attaching tank supports to frame.
5. Remove tank complete with mounting brackets and support straps.
6. Remove tank from brackets and support straps, if necessary.
7. To install, reverse the removal procedures. Replace all anti-squeak material.

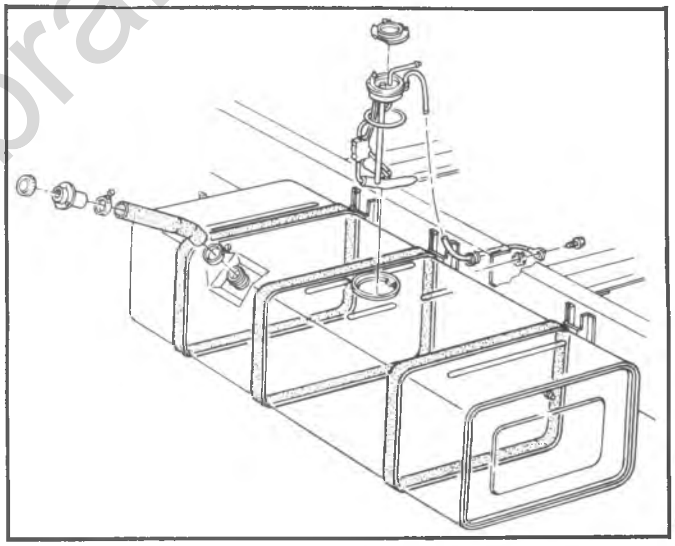


Fig. 1—Fuel Tank (50 Gal.), Meter and Filler Neck-P30 Model

EXHAUST SYSTEM

GENERAL DESCRIPTION

For alignment purposes, the muffler outlet flange is notched and mates to a welded tab located on the outside diameter of the tailpipe. The exhaust pipes and muffler use locater tabs for alignment.

The exhaust system on a vehicle under 6200 GVW has a catalytic converter between the front exhaust pipe and the tailpipe.

The catalytic converter is an emission control device added to the exhaust system to reduce hydrocarbon and carbon monoxide pollutants from the exhaust gas stream. The converter contains beads which are coated with a catalytic material containing platinum and palladium.

The catalytic converter requires the use of unleaded fuel only.

Periodic maintenance of the exhaust system is not required; however, if the car is raised for other service, it is advisable to check the general condition of the catalytic converter, pipes and mufflers.

CAUTION: *When jacking or lifting vehicle from frame side rails, be certain lift pads do not contact catalytic converter as damage to converter will result.*

COMPONENT PART REPLACEMENT

GENERAL

Exhaust System Pipes and Resonators Rearward of the Mufflers Must Be Replaced Whenever A New Muffler Is Installed.

NOTE: When a muffler is replaced use sealing compound at the clamped joint to prevent leaks. New clamp released for 1975 is designed to make an indentation in the exhaust pipe for improved retention. When reinstalling clamp, align clamp over indentation in exhaust pipe.

Truck exhaust systems vary according to series and model designation. Series 10-30 trucks use a split-joint design system in which the exhaust pipe-to-muffler are clamped together and muffler-to-tailpipe connections are welded together. All mufflers and tailpipes are welded assemblies (no clamps) in 1975.

NOTE: All 10-20-30 series exhaust systems are aluminized steel except: (1) "C" Series exhaust pipes and (2) stainless steel exhaust pipes on vehicles equipped with underfloor catalytic converters. Always use correct replacement parts when servicing these systems.

When installing a new exhaust pipe or muffler and tailpipe, on any model, care should be taken to have the correct alignment and relationship of the components to each other. Particular care should be given to the installation of the exhaust pipe and crossover pipe assembly on V-8 engine single exhaust systems. Incorrectly assembled parts of the exhaust system are frequently the cause of annoying noises and rattles due to improper clearances or obstructions to the normal flow of gases. Leave all clamp bolts and muffler bolts loose until all parts are properly aligned and then tighten, working from front to rear.

Exhaust system hangers, hanger brackets, and clamps which are damaged should be replaced to maintain proper exhaust system alignment.

NOTE: When reinstalling exhaust pipe to manifold, always use new packings and nuts. Be sure to clean manifold stud threads with a wire brush when installing the new nuts.

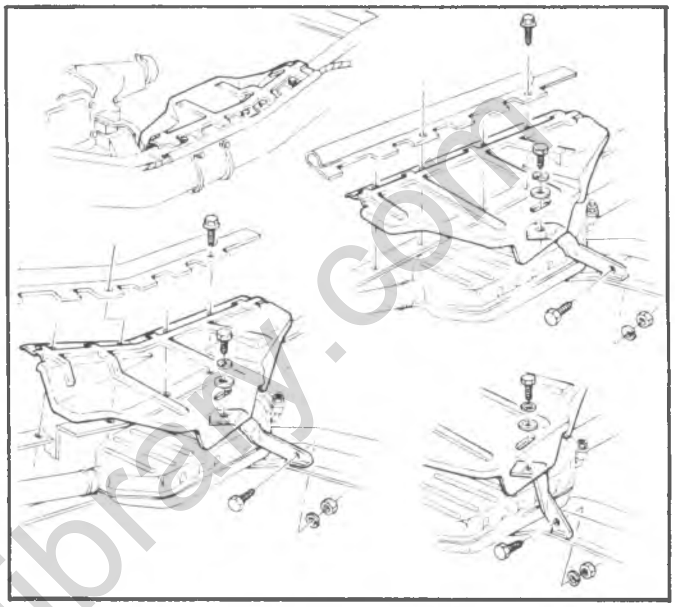


Fig. 2—Converter Heat Shield - C10 Model

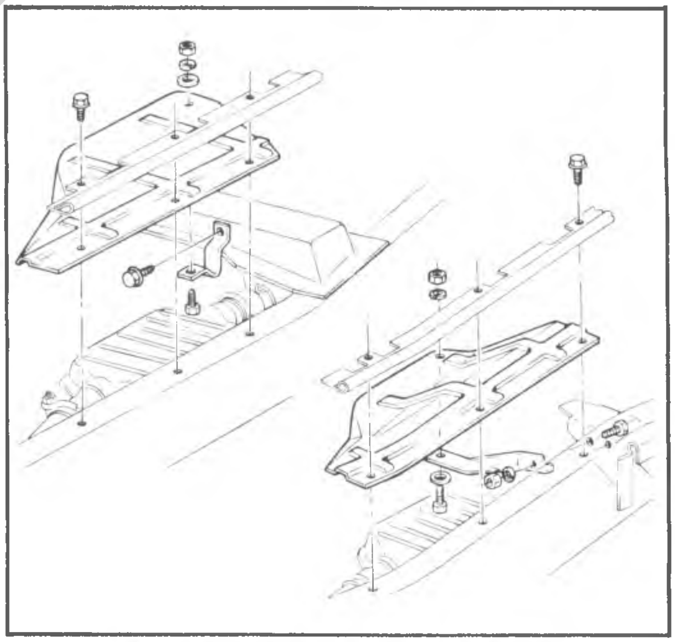


Fig. 3—Converter Heat Shield - K10 Model

CONVERTER HEAT SHIELD

CK 10 Model

Refer to Figures 2 and 3 for converter heat shields.

CATALYTIC CONVERTER (FIGS. 4 and 5)

CK10 Model

Removal

1. Raise vehicle on hoist.
2. Remove clamps at front and rear of converter.
3. Cut converter pipes at front and rear of converter and remove converter.
4. Remove support attaching converter-to-transmission or transfer case.
5. Remove converter pipe-to-exhaust pipe and converter pipe-to-tailpipe.

Installation

1. With sealer on exhaust pipe and tailpipe install pipes into converter.
2. Loosely connect support attaching converter-to-transmission or transfer case.
3. Install new "U" bolts and clamps at front and rear of converter.
4. Check all clearance and tighten clamps and upport.
5. Lower vehicle and remove from hoist.

Catalyst Removal

If necessary, the catalyst in the converter can be replaced on the car with Tool No. J-25077.

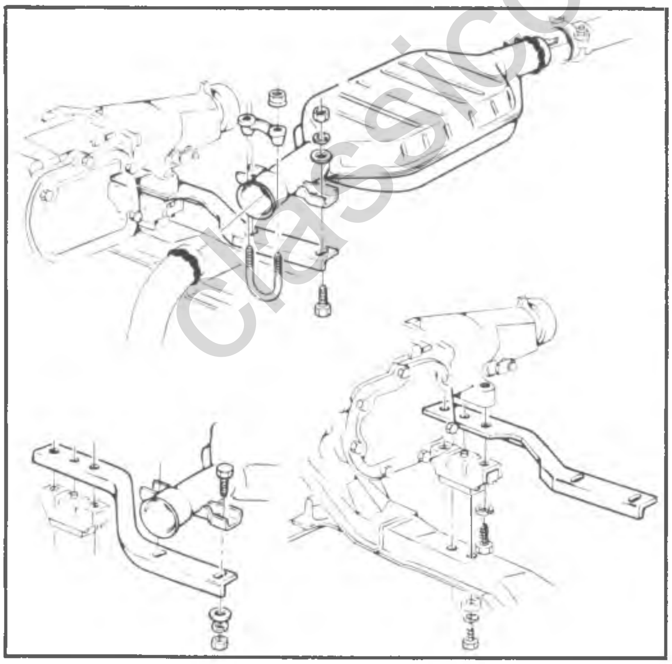


Fig. 4—Catalytic Converter - C10 Model

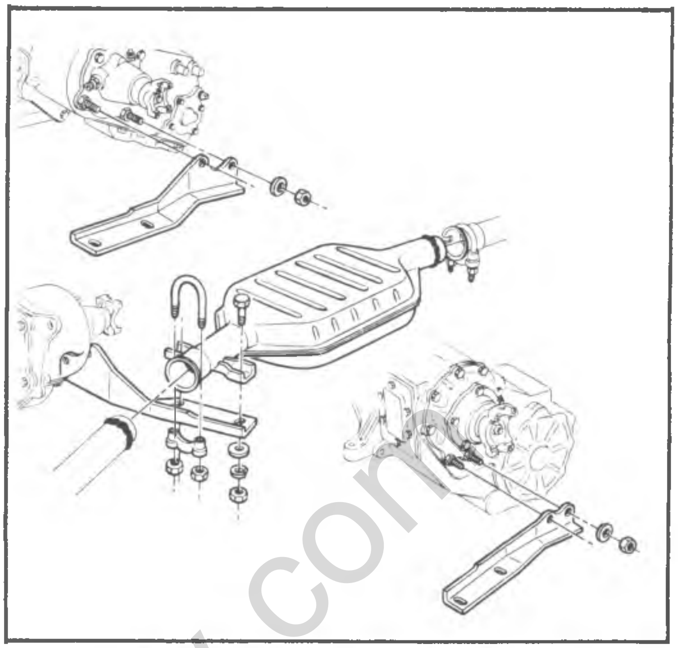


Fig. 5—Catalytic Converter - K10 Model

1. Install aspirator J-25077-2 (Fig. 6).
2. Connect air supply line to aspirator to create a vacuum in the converter to hold beads in place when fill plug is removed.
3. Remove converter fill plug with 3/4" hex wrench or Tool J-25077-3 and 4 (Fig. 7).

WARNING: To prevent serious burns, avoid contact with hot catalyst.

4. Clamp on vibrator J-25077-1 (Fig. 8).

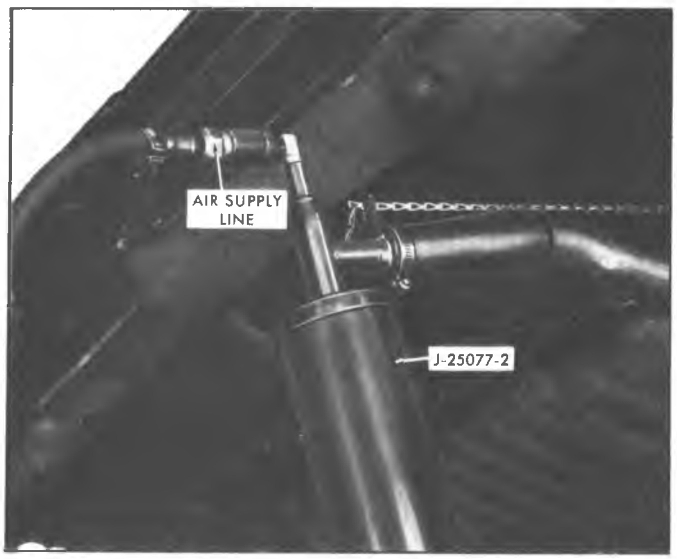


Fig. 6—Installing Aspirator

Fig. 7—Removing Fill Plug

5. Install empty catalyst container to converter (Fig. 9).
6. Disconnect air supply to aspirator and connect air supply to vibrator. Catalyst will now drain from the converter into the empty container.
7. When all the catalyst has been removed from the converter, disconnect air supply to vibrator and remove container from the converter.
8. Discard used catalyst.

Catalyst Installation

1. Fill container with approved replacement catalyst.
2. Install fill tube extension to the fixture J-25077-1 (Fig. 10).
3. Connect air supply to aspirator and vibrator.
4. Attach catalyst container to the fixture.
5. After the catalyst stops flowing, disconnect air supply to the vibrator.
6. Remove vibrator and check that catalyst has filled converter flush with fill plug hose. Add catalyst if required.

Fig. 8—Installing Vibrator

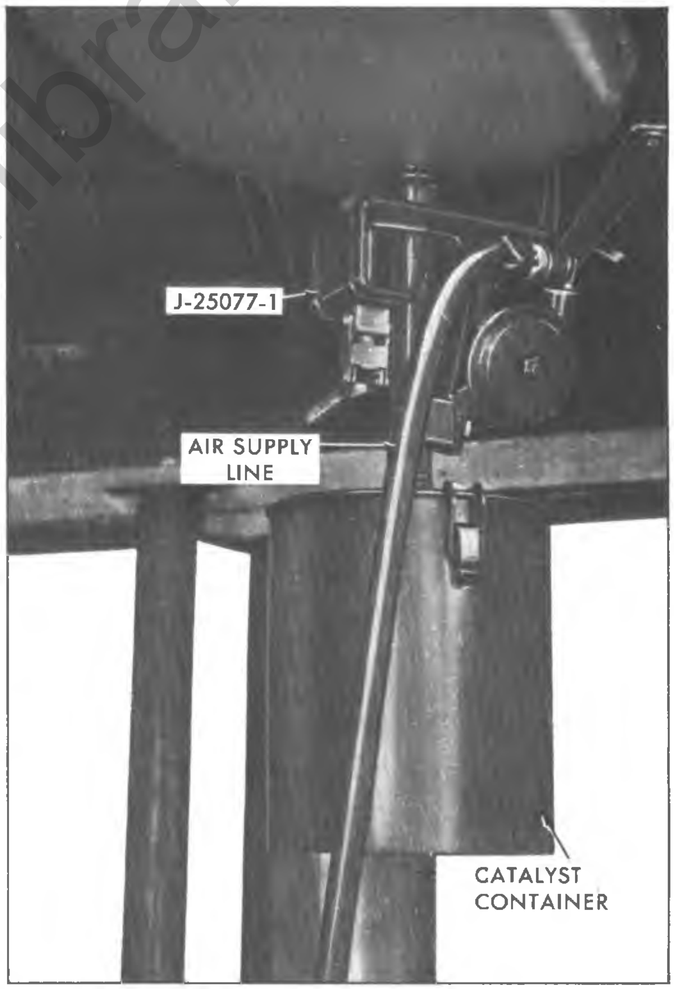


Fig. 9—Container Installed on Vibrator

7. Apply an anti-seize compound to the fill plug; install and tighten to 50 ft. lbs.

Bottom Cover

If, for any reason, the bottom cover of the converter is torn or severely damaged, it can be replaced with a repair kit.

Bottom Cover Replacement

1. Remove bottom cover by cutting close to the bottom outside edge, Figure 11 and 12. Do not remove the fill plug. The depth of the cut must be very shallow to prevent damage to the inner shell of the converter.
2. Remove insulation (Fig. 13).
3. Inspect inner shell of the converter for damage. If there is damage in the inner shell, the converter assembly must be replaced (Fig. 14).
4. Place new insulation in the replacement cover. Apply sealing compound, all around the cover after the insulation is in position. Apply extra sealer at the front and rear opening for the pipes (Fig. 15).
5. Install replacement cover on converter (Fig. 15).

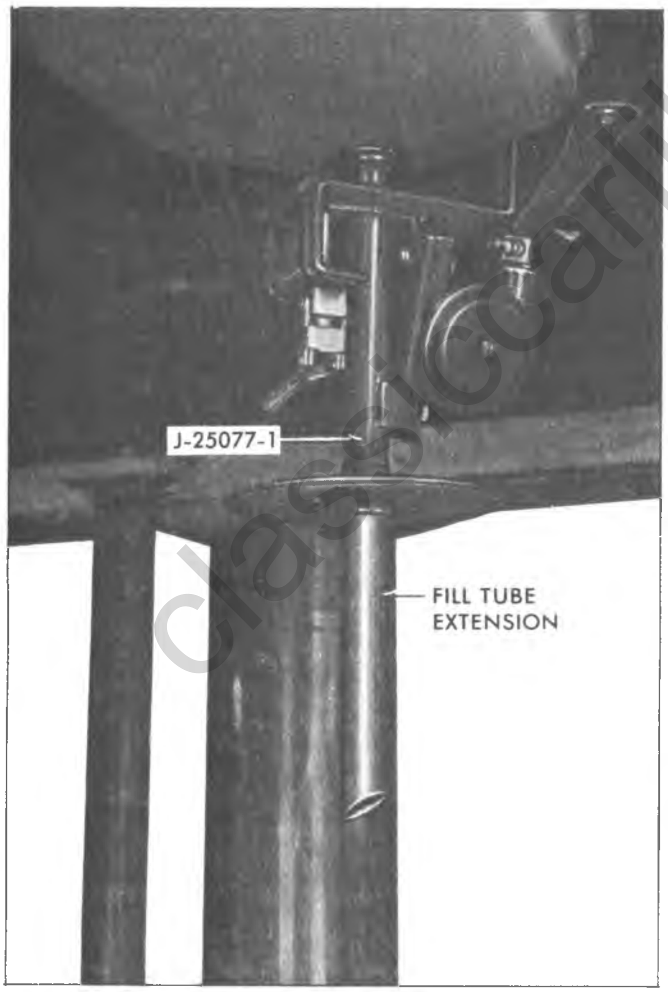


Fig. 10—Fill Tube Extension

6. Install cover retaining channels on both sides of the converter (Fig. 16).
7. Attach 2 clamps over retaining channels at each end of the converter (Fig. 17).

Fig. 11—Removing Bottom Cover

Fig. 12—Removing Bottom Cover

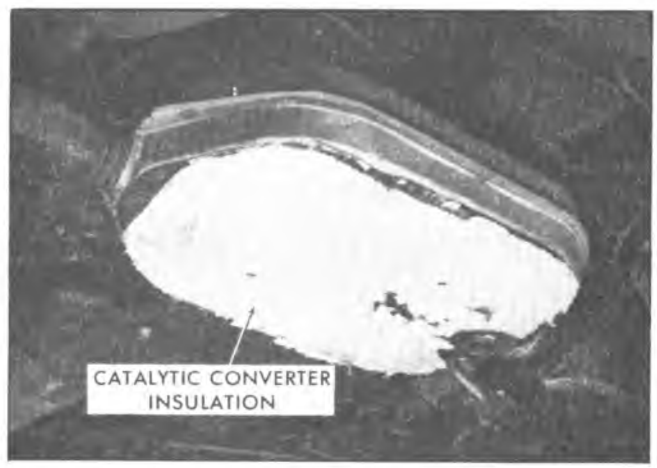


Fig. 13—Catalytic Converter Insulation

Fig. 14—Catalytic Converter Inner Shell

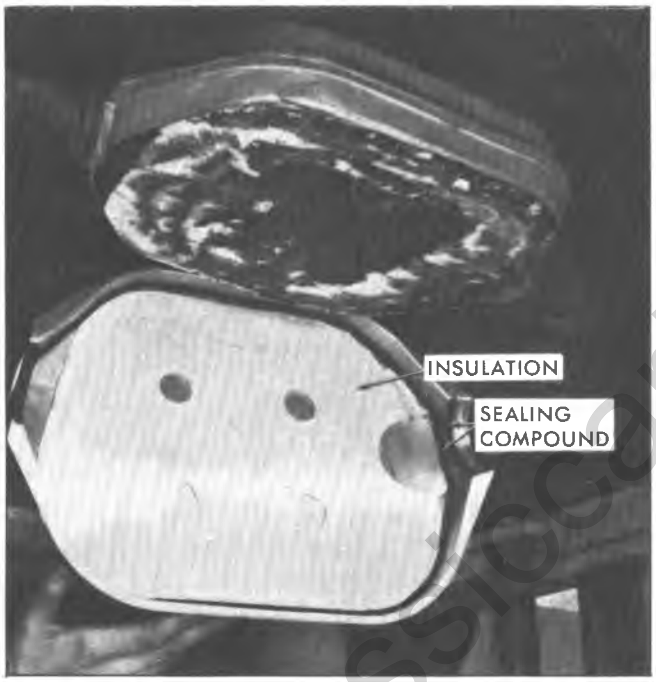


Fig. 15—Installing Bottom Cover Replacement

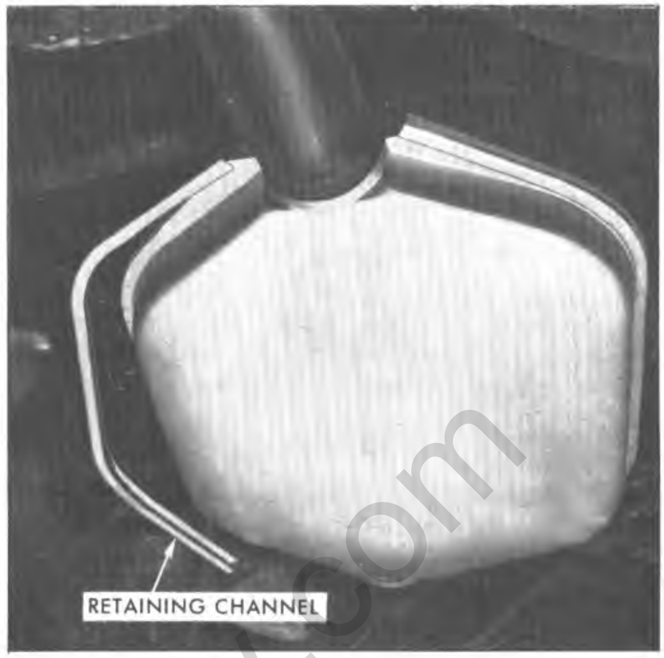


Fig. 16—Installing Bottom Cover Retaining Channels

Fig. 17—Installing Bottom Cover Clamps

DIAGNOSIS

EXHAUST SYSTEM

CONDITION	POSSIBLE CAUSE	CORRECTION
Leaking Exhaust Gases	Leaks at pipe joints.	Tighten U-bolt nuts at leaking joints to 30 foot-pounds.
	Damaged or improperly installed seals or packing.	Replace seals or packing as necessary.
	Loose exhaust pipe heat tube extension connections.	Replace seals or packing as required. Tighten stud nuts or bolts to specifications.
	Burned or rusted out exhaust pipe heat tube extensions.	Replace heat tube extensions as required.
Exhaust Noises	Leaks at manifold or pipe connections.	Tighten clamps at leaking connections to specified torque. Replace gasket or packing as required.
	Burned or blown out muffler.	Replace muffler assembly.
	Burned or rusted out exhaust pipe.	Replace exhaust pipe.
	Exhaust pipe leaking at manifold flange.	Tighten attaching bolts nuts to 17 foot-pounds.
	Exhaust manifold cracked or broken.	Replace manifold.
	Leak between manifold and cylinder head.	Tighten manifold to cylinder head stud nuts or bolts to specifications.
Loss of engine power and/or internal rattles in muffler.	Dislodged turning tubes and or baffles in muffler.	Replace muffler.
Loss of engine power.	Imploding (inner wall collapse) of exhaust pipe (C Truck)	Replace exhaust pipe.

SPECIAL TOOLS

1. J-25077-1 Vibrator — Include Catalyst Container and Fill Tube Extension
2. J-25077-2 Aspirator

Fig. 1ST—Special Tools

SECTION 9
STEERING

INDEX

GENERAL DESCRIPTION

All 1975 truck models have basically the same steering systems as the 1974 models. All service procedures outlined in the 1974 Light Duty Truck Service Manual apply as well to the 1975 truck steering systems except as described below.

MAINTENANCE AND ADJUSTMENTS

POWER STEERING BELT ADJUSTMENT

Power steering belt adjustment for 1975 truck models is identical to the procedure outlined in the 1974 Light Duty Truck Service Manual, Section 9, Page 9-27 with the exception of a 1/2" square hole in the support bracket on some engines to aid in belt adjustment as shown in Fig. 1. Use a 1/2" drive ratchet or breaker bar handle, inserted in the hole to assist in obtaining proper belt adjustment.

POWER STEERING GEAR

Adjustment of the power steering gear in the vehicle is discouraged because of the difficulty involved in adjusting the worm thrust bearing preload and the confusing effects of the hydraulic fluid in the gear. The steering gear adjustment is made only as a correction and not as a required periodic adjustment.

The effect of improperly adjusted worm thrust bearings or an improperly adjusted over-center preload could cause a handling stability complaint.

To properly adjust the power steering gear, the assembly **MUST** be removed from the vehicle and adjustments performed as outlined in the 1974 Chevrolet Passenger Car and Light Duty Truck Overhaul Manual, Section 9.

For removal of the power steering gear assembly follow the procedure as outlined under "Power Steering Gear", in the 1974 Light Duty Truck Service Manual, Section 9.

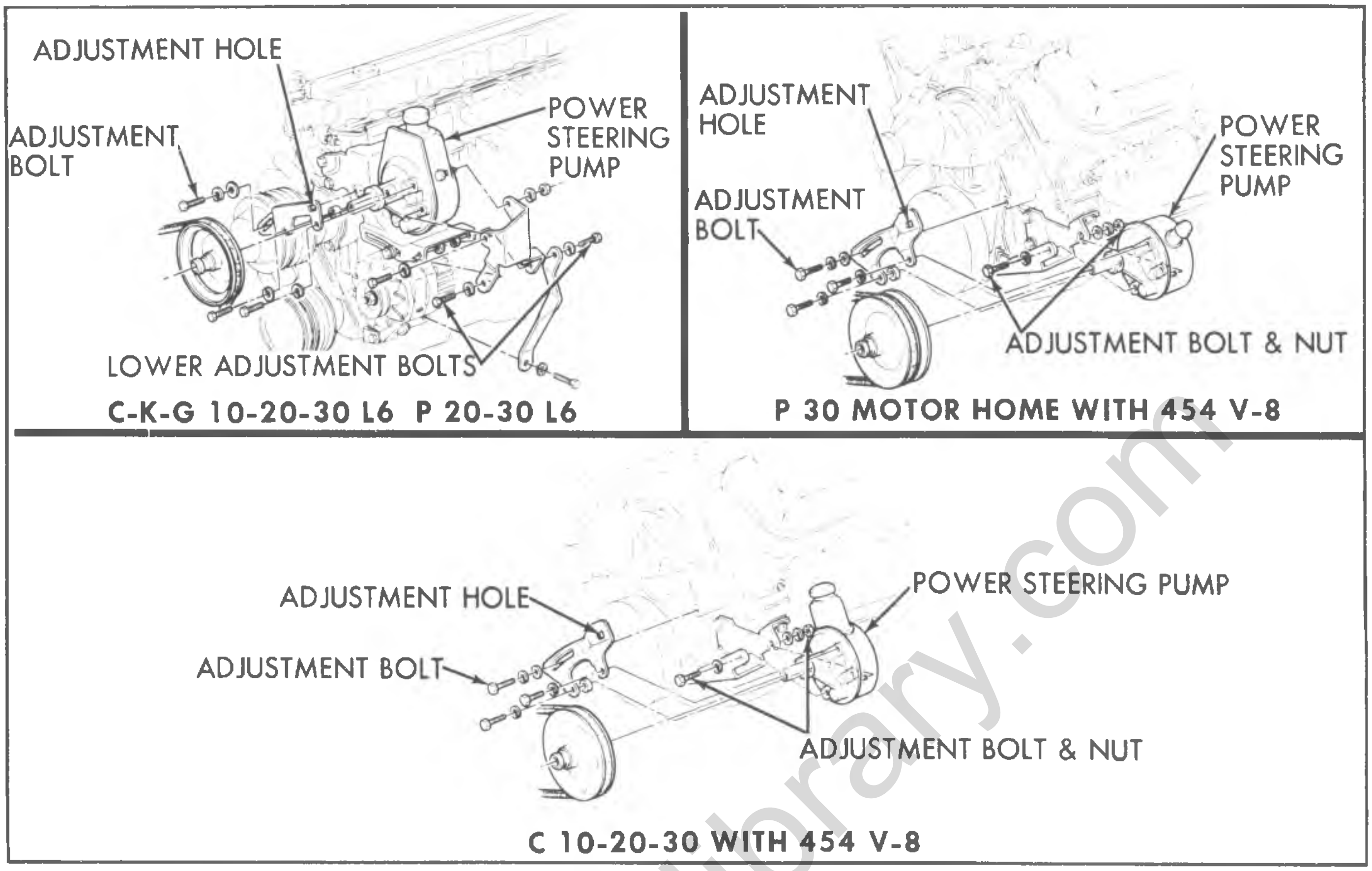


Fig. 1—Power Steering Pump Adjustment-Typical

COMPONENT REPLACEMENT AND REPAIR

STEERING WHEEL (Fig. 2)

Removal

The service procedures for the removal and installation of the steering wheel are identical to the procedures outlined in the 1974 Light Duty Truck Service Manual, Section 9 with the exception of the addition of a steering wheel snap ring as shown in Figure 2. Refer to Page 9-29 of the 1974 Light Duty Truck Service Manual for proper removal procedure.

When removing the steering wheel, remove the snap ring as Step 3 in the removal procedure.

Installation

When installing the steering wheel, replace the snap ring after tightening the steering wheel nut to proper torque specifications.

STEERING LINKAGE

All service procedures for the 1975 steering linkage are identical with those outlined in the 1974 Light Duty Truck Service Manual, Section 9.

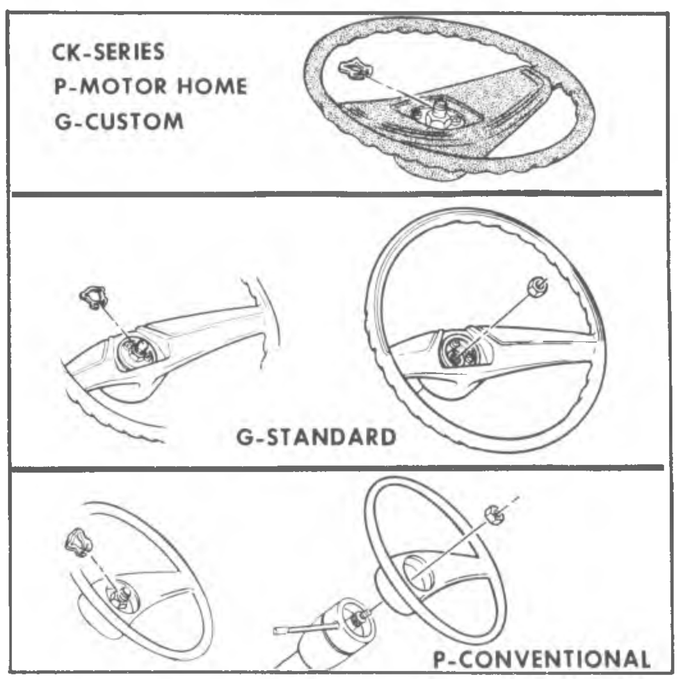


Fig. 2—Steering Wheel Snap Ring

Figure 3 shows the latest linkage used on the G-Series truck and the P-Series, Motor Home models.

IDLER ARM

NOTE: The idler arm assembly should always be replaced if it is found that an up or down force of 25 pounds, applied at the relay rod end of the idler arm, produces a vertical lash of more than 1/8" (total of 1/4") in the straight ahead position.

TIE RODS

Service procedures for the 1975 tie rod assemblies are identical to those outlined in the 1974 Light Duty Truck Service Manual, Section 9.

Figures 4 and 5 show the updated tie rod clamp relationships for 1975 models.

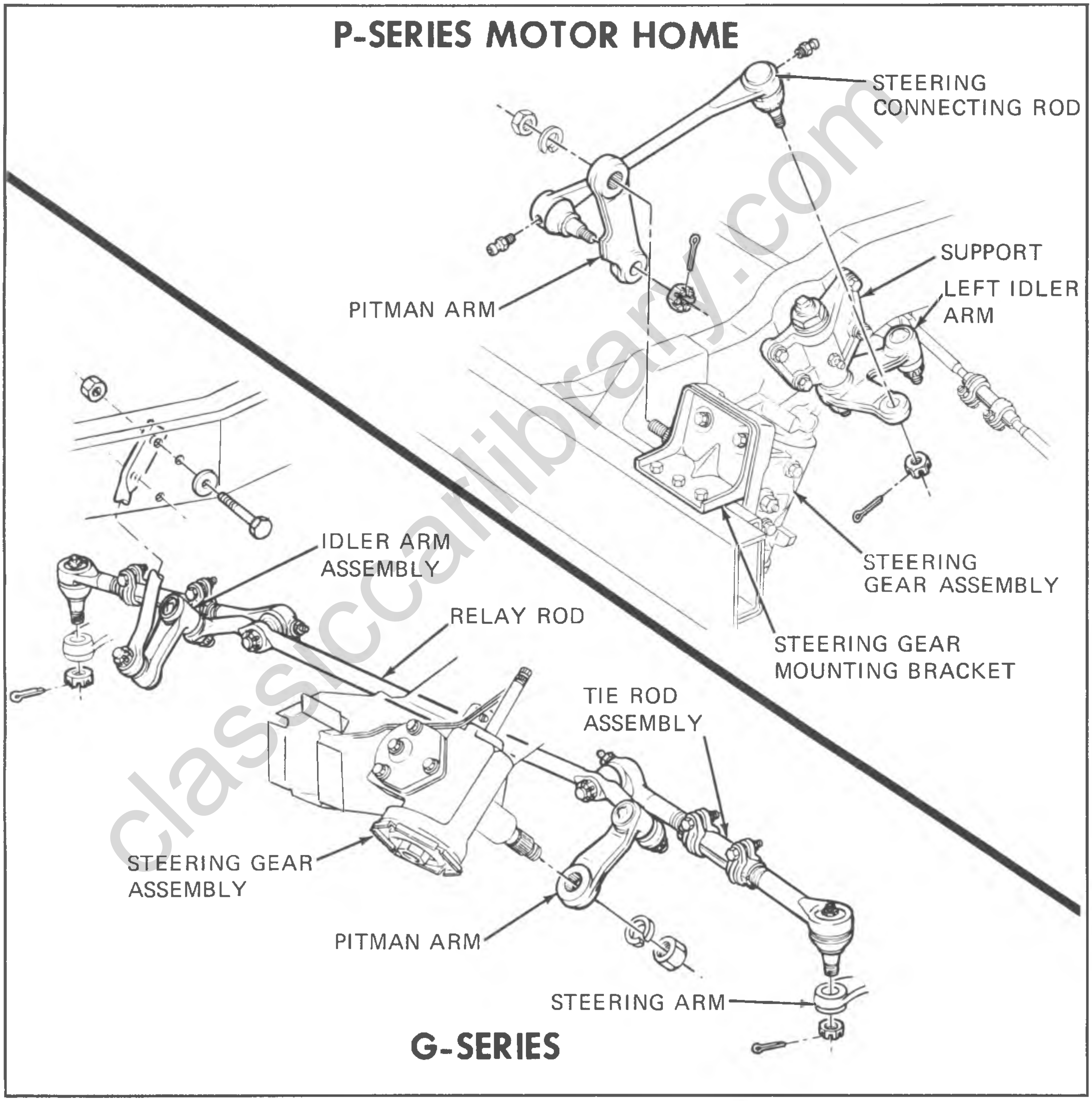


Fig. 3—Steering Linkage

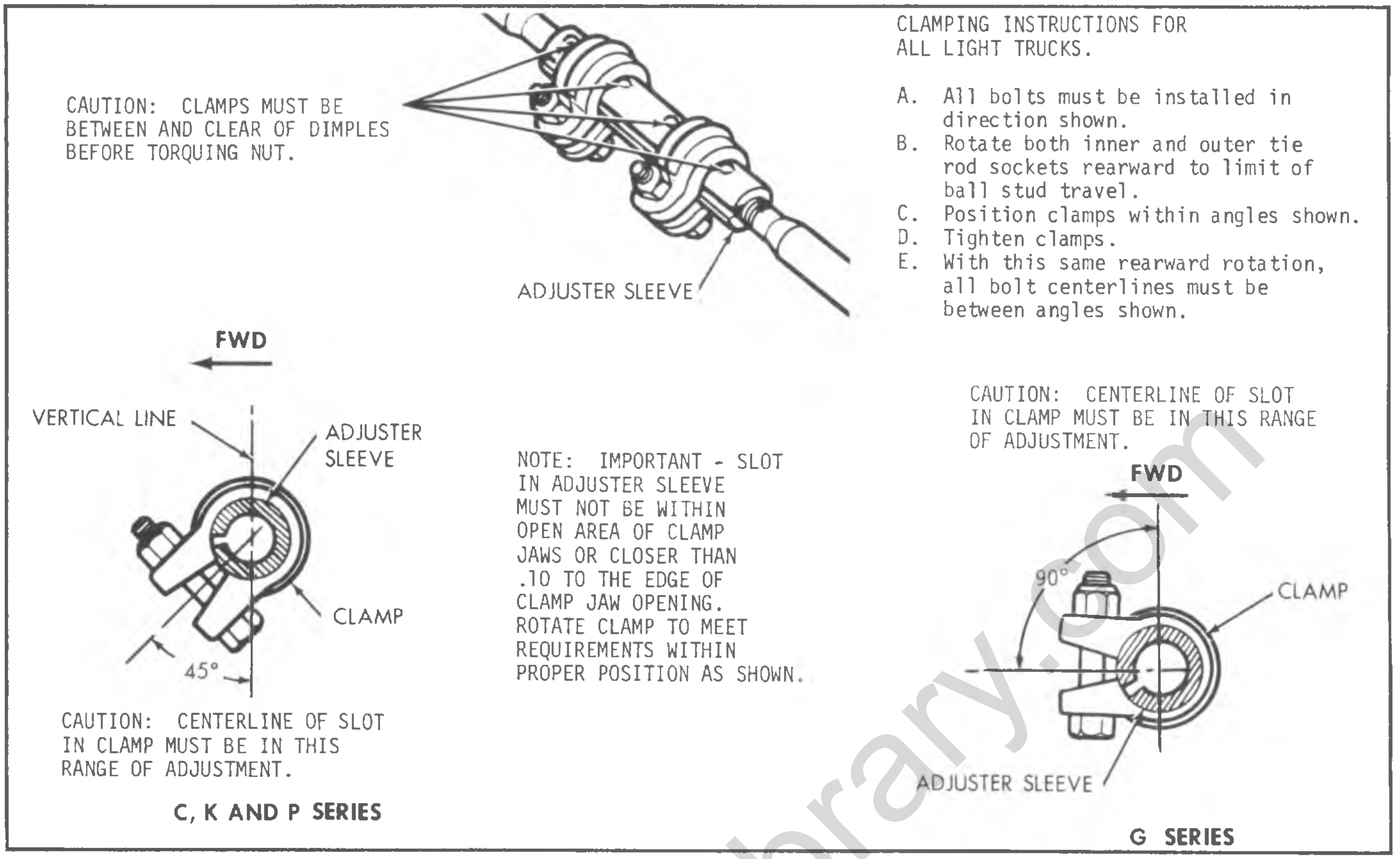


Fig. 4—Tie Rod Clamp Relationships

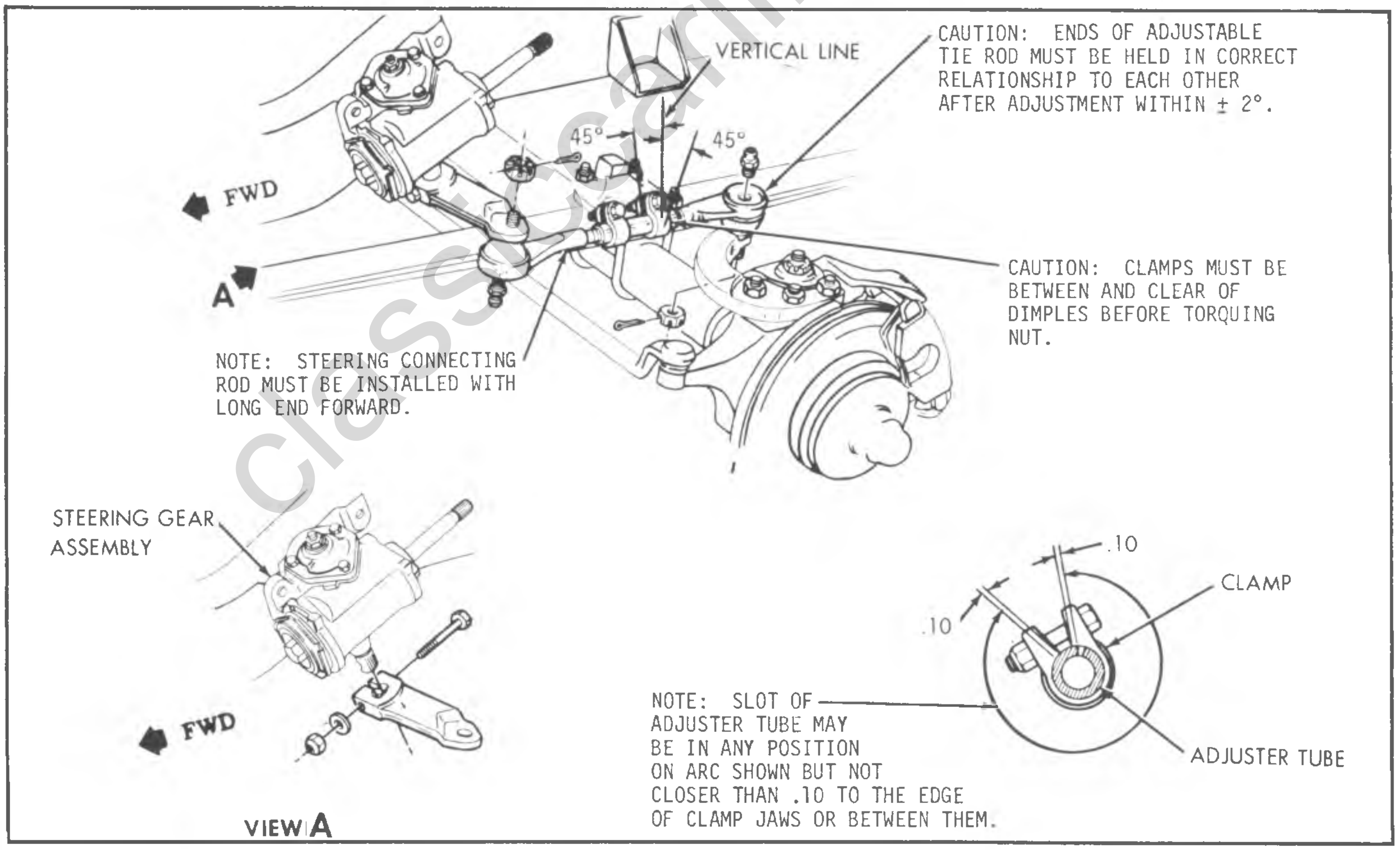


Fig. 5—Adjustable Connecting Rod Assembly—K Series

POWER STEERING SYSTEM

POWER STEERING PUMP (Fig. 6)

Removal

1. Disconnect hoses at pump. When hoses are disconnected, secure ends in raised position to prevent drainage of oil. Cap or tape the ends of the hoses to prevent entrance of dirt. On models with remote reservoir, disconnect reservoir hose at pump and secure in raised position. Cap hose pump fittings.
2. Install two caps at hose fittings to prevent drainage of oil from pump.
3. Loosen bracket-to-pump mounting nuts.
4. Remove pump belt.
5. Remove pump from attaching parts and remove pump from vehicle.

Installation

1. Position pump assembly on vehicle (Fig. 6) and install attaching parts loosely.
2. Connect and tighten hose fittings.
3. Fill reservoir. Bleed pump by turning pulley backward (counter-clockwise as viewed from the front) until air bubbles cease to appear.
4. Install pump belt over pulley.
5. Tension belt as outlined under "Pump Belt Tension Adjustment".
6. Bleed as outlined under "Maintenance and Adjustments".

POWER STEERING HOSES

All 1975 power steering hoses, hose routings and attachments, and other power steering plumbing is essentially the same as 1974 except as shown in Figures 7, 8 and 9.

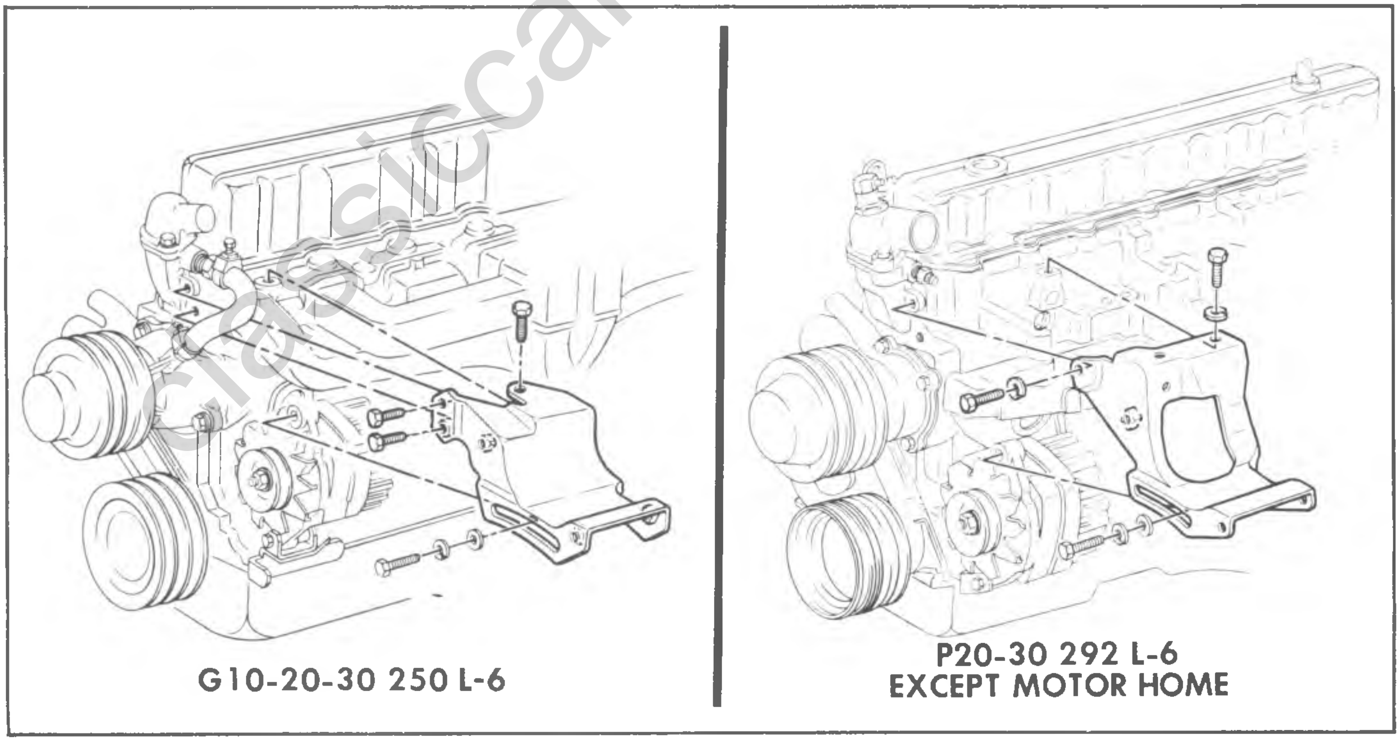


Fig. 6—Power Steering Pump Mounting.

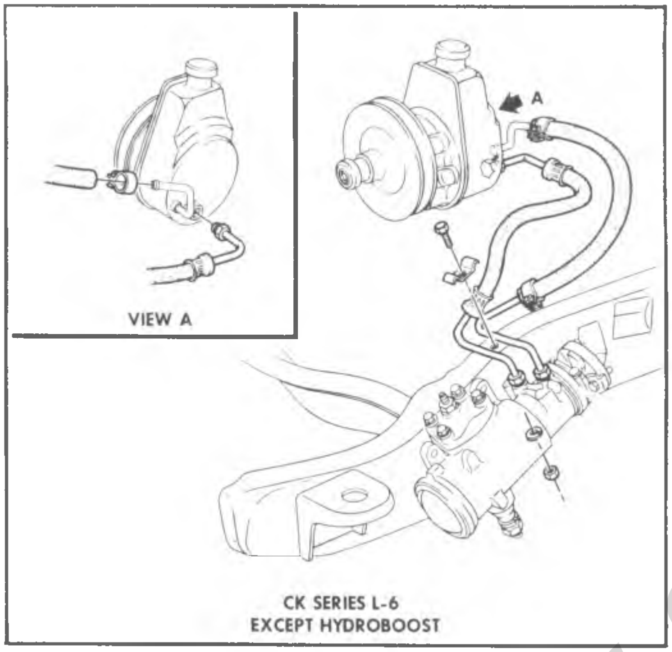


Fig. 7—Power Steering Hose Routing

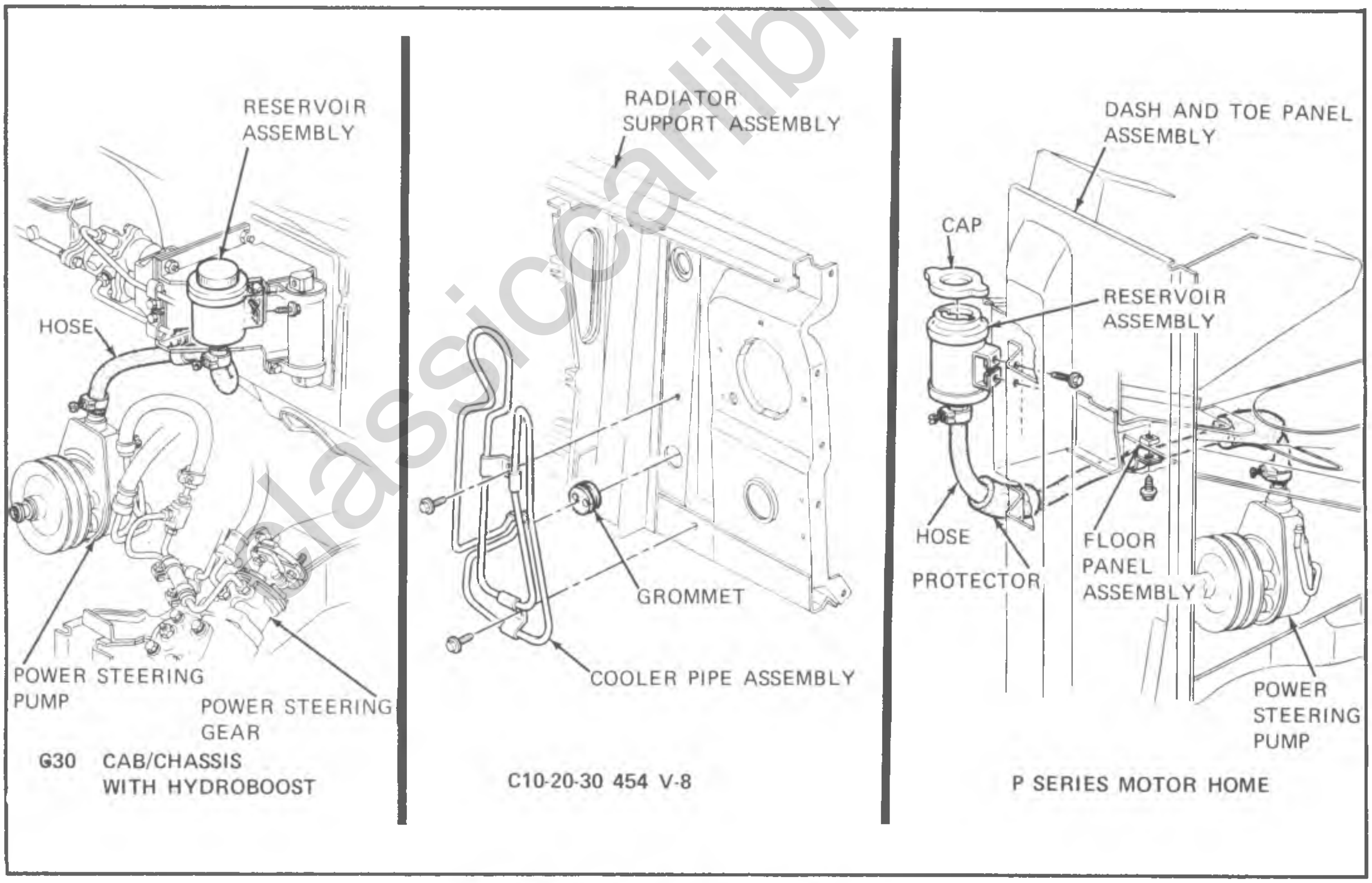


Fig. 8—Power Steering Hoses and Piping

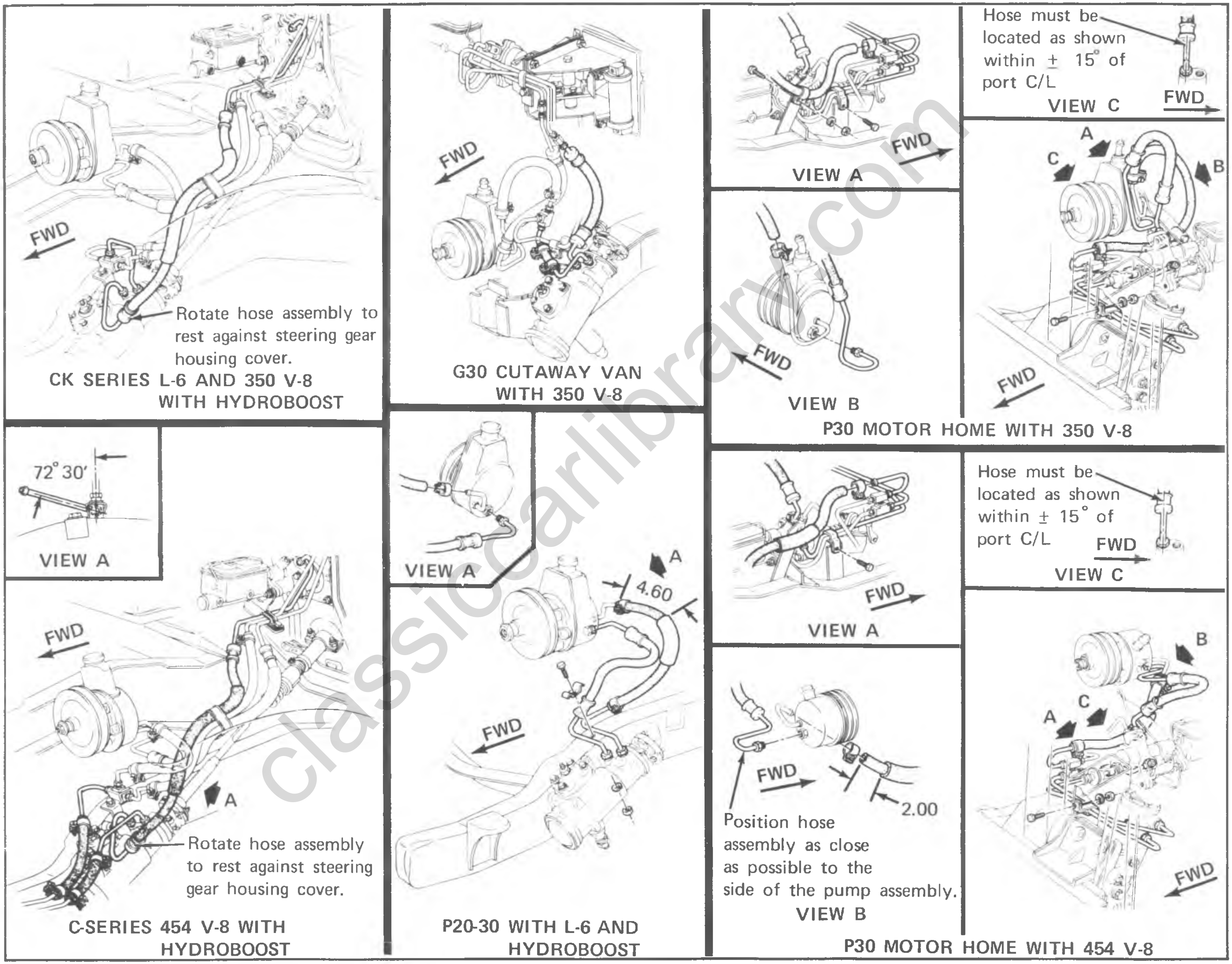


Fig. 9—Power Steering Hose Routing With Hydro-Boost

1. PUMP PULLEY REMOVER J-25034

2. PUMP PULLEY INSTALLER J-25033

Fig. 10—Special Tools.

SECTION 10

WHEELS AND TIRES

The 1975 wheel and tire maintenance and service operations remain essentially the same as outlined in the 1974 Truck Service Manual. Minimum Tire Inflation Pressure Tables and additional information for torquing dual wheels on P300 models have been revised as listed below to 1975 specifications.

ATTACHMENT OF DUAL WHEELS ON P300 MODELS

To assure secure attachment of the dual disc wheels, it is important that all dirt or rust scale be removed from the mating surface of the wheels, hub, and clamp ring as well as the stud and nut. POWER DRIVE NUTS THEN MANUALLY INSPECT TORQUE AT 130-180 FT. LBS. MANUAL TORQUE ONLY: 150-200 FT. LB.

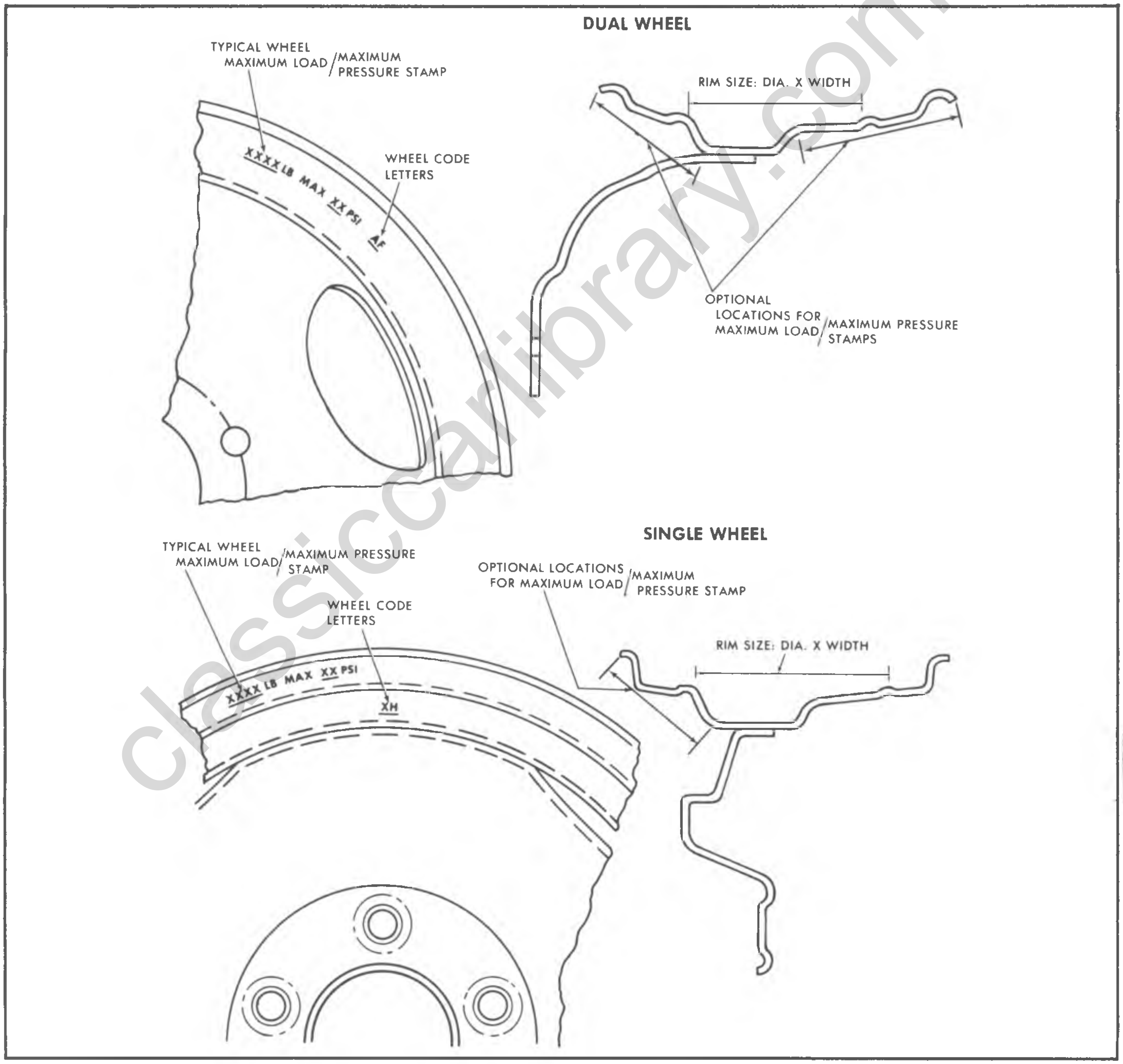


Fig. 1—Wheel Code Location

TIRE LOAD & INFLATION PRESSURE

PASSENGER TYPE TIRES FOR LIGHT TRUCKS USED IN HIGHWAY SERVICE

Tire Size	Range Load	Tire Load Limits at Various Inflation Pressures										
		20	22	24	26	28	30	32	34	36	38	40
E78-15	B	970	1030	1080	1130	1180	1230	1270				
F78-15	B	1060	1110	1160	1220	1270	1320	1370				
G78-15	B	1140	1190	1260	1310	1370	1420	1470				
G78-15	D	1140	1190	1260	1310	1370	1420	1470	1530	1570	1620	1670
GR78-15	B	1140	1190	1260	1310	1370	1420	1470				
H78-15	B	1236	1309	1373	1436	1500	1555	1609				
H78-15	D	1236	1309	1373	1436	1500	1555	1609	1664	1719	1774	1827
J78-15	B	1300	1370	1440	1500	1570	1630	1690				
JR78-15	B	1300	1370	1440	1500	1570	1630	1690				
L78-15	B	1382	1455	1527	1591	1664	1727	1791				
LR78-15	C	1382	1455	1527	1591	1664	1727	1791	1855	1900		
L78-15	D	1382	1455	1527	1591	1664	1727	1791	1855	1900		
8.25-15	D	1136	1191	1255	1309	1364	1418	1473	1528	1572	1619	1664

TIRES FOR LIGHT TRUCKS USED IN HIGHWAY SERVICE

TIRES USED AS SINGLES

Tire Size	Load Range	Tire Load Limits at Various Inflation Pressures									
		30	35	40	45	50	55	60	65	60	75
		TUBE TYPE TIRES MOUNTED ON 5° TAPERED BEAD SEAT RIMS									
6.50-16	C	1270	1390	1500	1610						
7.00-15	C	1350	1480	1610	1720						
7.00-15	D	1350	1480	1610	1720	1830	1940	2040			
7.00-16	C	1430	1560	1680	1800						
7.50-16	C	1620	1770	1930	2060						
7.50-16	D	1620	1770	1930	2060	2190	2310	2440			
7.50-16	E	1620	1770	1930	2060	2190	2310	2410	2560	2670	2780
		TUBELESS TIRES MOUNTED ON 15° TAPERED BEAD SEAT DROP CENTER RIMS									
8-19.5	D	—	—	—	—	2110	2270	2410	2540	2680	2800

WIDE BASE TUBELESS TIRES USED AS SINGLES

Tire Size	Load Range	Tire Load Limits at Various Inflation Pressures									
		30	35	40	45	50	55	60	65	70	75
7.00-14LT	C	6	1030	1130	1220	1310					
7.00-14LT	D	8	1030	1130	1220	1310	1390	1470	1550		
6.70-15LT	C	6	1210	1320	1430	1520					
C78-15LT	C	1080	1180	1280	1370						
H78-15LT	C	1440	1580	1710	1830						
8.00-16.5	C	1360	1490	1610	1730						
8.00-16.5	D	1360	1490	1610	1730	1840	1945	2045			
8.00-16.5	E	1360	1490	1610	1730	1840	1945	2045	2145	2240	2330
8.75-16.5	C	1570	1720	1850	1990						
8.75-16.5	D	1570	1720	1850	1990	2110	2240	2350			
8.75-16.5	E	1570	1720	1850	1990	2110	2240	2350	2470	2570	2680
9.50-16.5	D	1860	2030	2190	2350	2500	2650	2780			
9.50-16.5	E	1860	2030	2190	2350	2500	2650	2780	2920	3050	3170
10.00-16.5	C	1840	2010	2170	2330						

TIRES USED AS DUALS

Tire Size	Load Range	Tire Load Limits at Various Inflation Pressures									
		30	35	40	45	50	55	60	65	70	75
		TUBE TYPE TIRES MOUNTED ON 5° TAPERED BEAD SEAT RIMS									
6.50-16	C	1120	1225	1320	1420						
7.00-16	C	1260	1365	1475	1580						
7.00-16	D	1260	1365	1475	1580	1685	1780	1870			
7.00-18	D	—	—	1710	1830	1950	2060	2170	2270		
7.50-16	C	1430	1565	1690	1815						
7.50-16	D	1430	1565	1690	1815	1930	2040	2140			
		TUBELESS TIRES MOUNTED ON 15° TAPERED BEAD SEAT DROP CENTER RIMS									
8.00-17.5	D	1640	1790	1940	2075	2205	2335	2455			
8.00-19.5	D	—	—	1850	1990	2110	2230	2350	2460		
8.00-19.5	E	—	—	1850	1990	2110	2230	2350	2460	2570	2680 (#)

(Refer to Tire Load and Inflation Pressure Notes)

(#) 2780 lbs. at 80 lbs. pressure.

TIRE LOAD AND INFLATION PRESSURE
TIRES FOR LIGHT TRUCKS USED IN HIGHWAY SERVICE (Cont'd)

WIDE BASE TUBELESS TIRES USED AS DUALS

Tire Size	Load Range	Tire Load Limits at Various Inflation Pressures									
		30	35	40	45	50	55	60	65	70	75
8.00-16.5	C	1195	1310	1415	1520						
8.00-16.5	D	1195	1310	1415	1520	1620	1710	1800			
8.75-16.5	C	1380	1515	1630	1750						
8.75-16.5	D	1380	1515	1630	1750	1855	1970	2070			
8.75-16.5	E	1380	1515	1630	1750	1855	1970	2070	2175	2260	2360

Tire Load and Inflation Pressure Notes

1. Tire inflation pressure may increase as much as 6 pounds per square inch (psi) when hot.
2. For continuous high speed operation, (over 75 mph) with passenger car type tires increase tire inflation pressure 4 pounds per square inch over the recommended pressures up to a maximum of 32 pounds per square inch cold for load range B tires, or 36 pounds per square inch cold for load range C tires. Sustained speeds above 75 mph are not recommended when the 4 pounds per square inch adjustment would require pressures greater than the maximum stated above.
3. For sustained high speed driving over 65 MPH, with truck type tires cold inflation pressures must be increased 10 PSI above those specified in the above table for the load being carried. For special operating conditions . . . such as campers or other high center of gravity loading vehicles . . . cold inflation pressures may be increased up to 10 PSI. The total increase in cold inflation pressures shall not exceed 10 PSI above those specified in the above table for the load being carried.
4. Cold tire inflation pressure: after vehicle has been inoperative for 3 hours or more, or driven less than 1 mile. Hot tire inflation pressure: after vehicle has been driven 10 miles or at speeds of more than 60 miles per hour.
5. Loads should be distributed as evenly as possible in the cargo area.
6. Vehicles with luggage racks do not have a vehicle load limit greater than specified.
7. When towing trailers, the additional load on the axle induced by the trailer tongue load must not cause the axle load to exceed the limits stamped on the GVW plate. Tire inflation pressures must be adjusted accordingly.
8. Maximum load must not exceed the maximum tire load limit as indicated by the underscoring in the table. Minimum recommended cold inflation pressures for various loads must conform to the table.
9. The load at maximum inflation pressure stamped on the tire sidewall of passsenger-type tires will differ from the load shown in this table. This is in accordance with Tire and Rim Association standards requiring a reduced loading factor of approximately 91% for passenger-type tires used on trucks and multipurpose passenger vehicles.

WHEEL CODE AND LIMITS

CODE	SIZE OF WHEEL	WHEEL LIMITS	
		MAX. LOAD (LBS)	MAX. PRESS (PSI)
BT	15 x 7 JJ	2040	70
BJ	15 x 8	1760	40
BC	15 x 7 JJ	1900	70
BS	15 x 8.00 JJ	1760	40
DT	15 x 6 JJ	1670	55
AF	16.5 x 6.0	2680	85
XH	15 x 6 JJ	1670	55
XL	16 x 5.0 K	1800	55
XU	15 x 6 JJ	1670	55
BR	16 x 5.0 K	1800	55
CY	19.5 x 5.25	2460	75
CF	16 x 5.50 F	2440	70
FP	16.5 x 6.0	2350	70
BF	16.5 x 6.75	3170	85
XS	16 x 6.50 L	2780	85
BH	16.5 x 8.25	2750	70
DA	15 x 7.0 JJ	1900	70
FT	15 x 6.0 JJ	1900	70
AX	15 x 6 JJ	2040	70
AB	19.5 x 6.75	2780	85
YW	16 x 6.00	2440	75
CC	17.5 x 5.75	2455	70
CU	19.5 x 5.25	2800	85
CM	17.5 x 5.25	2155	70

MINIMUM TIRE INFLATION PRESSURE AT GROSS VEHICLE WEIGHT RATING (GVWR) (Lbs.)

Load Range	Replaces Ply Rating
A	2
B	4
C	6
D	8
E	10

		C, K 105 UTILITY												K10, 15 PICKUP						K10, 15 SUBURBAN						P10,15	
		2 WHEEL DRIVE						4 WHEEL DRIVE						4 WHEEL DRIVE						4 WHEEL DRIVE							
GVWR (Lbs.)		4900		5200		5700		4900		5400		5800 & 6300		5200		5800		6400		6200		6800		7300		6300	
TIRE	LOAD RANGE	FR	R	FR	R	FR	R	FR	R	FR	R	FR	R	FR	R	FR	R	FR	R	FR	R	FR	R	FR	R	FR	R
E78-15	B	32	32	—	—	—	—	32	32	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
G78-15	B	—	—	32	32	—	—	—	—	32	32	—	—	32	32	—	—	—	—	—	—	—	—	—	—	—	—
*6.50-16LT	C	—	—	45	45	45	45	—	—	45	45	45	45	45	45	45	45	—	—	45	45	—	—	—	—	—	—
H78-15	B	—	—	32	32	32	32	—	—	32	32	32	32	32	32	32	32	—	—	32	32	—	—	—	—	—	—
*7 00-15LT	C	—	—	45	45	45	45	—	—	45	45	45	45	45	45	45	45	45	45	45	45	—	—	—	—	—	—
*10-15LT	B	—	—	—	—	—	—	—	—	30	30	30	30	30	30	30	30	30	30	30	30	—	—	—	—	—	—
L78-15	B	—	—	28	30	28	30	—	—	32	32	32	32	32	32	32	32	32	32	30	32	30	32	—	—	26	32
*7 00-16LT	C	—	—	40	40	40	45	—	—	45	45	45	45	45	45	45	45	45	45	45	45	45	45	—	—	35	45
LR78-15	C	—	—	28	30	28	30	—	—	34	34	34	34	34	36	34	36	34	36	34	36	—	—	34	36	26	32
L78-15	D	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	30	36	—	—	34	40	30	36

		K20, 25 PICKUP & SUBURBAN						P20, 25						P30, 35 SINGLE WHEEL			
GVWR (Lbs.)		6800		7500		8400		6800		7500		8000		7600		9000	
TIRE	LOAD RANGE	FR	R	FR	R	FR	R	FR	R	FR	R	FR	R	FR	R	FR	R
8.75-16.5	C	40	45	40	—	—	—	40	45	40	—	—	—	45	—	—	—
8.75-16.5	D	40	60	40	60	—	—	40	60	40	60	—	—	55	60	—	—
9.50-16 5	D	30	60	—	—	30	60	30	60	—	—	30	60	40	60	40	—
10-16.5	D	30	60	—	—	30	60	30	45	—	—	30	60	—	—	—	—
7.50-16LT	C	35	45	35	—	35	—	40	45	40	—	40	—	45	—	—	—
7.50-16LT	D	35	60	35	60	35	—	40	60	40	60	40	—	45	60	45	—
7.50-16LT	E	35	75	—	—	35	75	40	75	—	—	40	75	—	75	45	75
9.50-16.5	E	—	—	—	—	—	—	—	—	—	—	—	—	—	—	40	75

		P30,35 Single					
GVWR (Lbs.)		7600		8200		9000	
TIRE	LOAD RANGE	FR	R	FR	R	FR	R
8.75-16.5	C	45	—	—	—	—	—
8.75-16 5	D	50	60	—	—	—	—
7.50-16	C	45	—	45	—	—	—
7.50-16	D	45	60	45	—	—	—
7.50-16	E	—	—	45	75	—	—
9.50-16.5	D	—	—	35	60	35	—
9.50-16.5	E	—	—	35	60	35	75

		P30, 35 DUAL WHEELS							
GVWR (Lbs.)		9000		10000		12000		14000	
TIRE	LOAD RANGE	FR	R	FR	R	FR	R	FR	R
8.75-16.5	C	45	40	45	45	—	—	—	—
8.75-16.5	D	—	40	—	55	—	—	—	—
7.50-16	C	45	35	45	45	—	—	—	—
7.50-16	D	45	35	45	45	—	—	—	—
8-19.5	D	50	40	50	45	50	65	50	—
8-19.5	E	50	40	50	45	—	—	50	80

MINIMUM TIRE INFLATION PRESSURE AT GROSS VEHICLE WEIGHT RATING (GVWR) (Lbs.)

		C10, 15 PICKUPS & CAB—CHASSIS								C10, 15 SUBURBANS					
GVWR (Lbs.)		4900		5300		5400		6000 & 6200		5400		6400		6800 & 7000	
TIRES	LOAD RANGE	FR	R	FR	R	FR	R	FR	R	FR	R	FR	R	FR	R
G78-15	B	32	32	32	32	—	—	—	—	32	32	—	—	—	—
H78-15	B	32	32	—	—	32	32	—	—	32	32	32	32	—	—
6.50-16LT	C	45	45	—	—	45	45	—	—	45	45	45	45	—	—
7.00-15LT	C	40	45	—	—	40	45	—	—	40	45	40	45	—	—
L78-15	B	28	32	—	—	28	32	28	32	28	32	28	32	—	—
7.00-16LT	C	40	45	—	—	40	45	40	45	40	45	40	45	—	—
LR78-15	C	28	36	—	—	28	36	28	36	28	36	28	36	28	36
L78-15	D	—	—	—	—	—	—	—	—	28	36	28	36	28	36

		C20, 25 PICKUP & CAB—CHASSIS								C20, 25 SUBURBAN						C30, 35 PICKUP & CAB—CHASSIS									
GVWR (Lbs.)		6400		7100		7500		8200		7100		7500		8200		6600		7400		8200		9000		9600	
TIRE	LOAD RANGE	FR	R	FR	R	FR	R	FR	R	FR	R	FR	R	FR	R	FR	R	FR	R	FR	R	FR	R	FR	R
8.75-16.5	C	45	45	45	—	—	—	—	—	45	45	—	—	—	—	45	45	45	—	—	—	—	—	—	—
8.75-16.5	D	45	60	45	60	—	—	—	—	45	60	—	—	—	—	45	60	45	60	—	—	—	—	—	—
7.50-16LT	C	40	45	40	60	—	—	—	—	40	45	—	—	—	—	40	45	40	—	—	—	—	—	—	—
10-16.5	C	35	45	35	45	—	—	—	—	—	—	—	—	—	—	35	45	35	60	—	—	—	—	—	—
7.50-16LT	D	40	60	40	60	—	—	—	—	40	60	—	—	—	—	40	60	40	60	—	—	—	—	—	—
7.50-16LT	E	40	75	40	75	40	75	40	75	40	75	40	75	40	75	40	75	40	75	40	75	—	—	—	—
9.50-16.5	D	35	60	35	60	35	60	35	60	35	60	35	60	35	60	35	60	35	60	35	60	35	—	—	—
9.50-16.5	E	—	—	—	—	—	—	—	—	—	—	—	—	—	—	35	75	35	75	35	75	35	75	35	75

C30, 35 PICKUP & CAB/CHASSIS DUAL REAR WHEELS					
GVWR (Lbs.)		9000		10000	
TIRE	LOAD RANGE	FR	R	FR	R
7.00-16LT	C	45	45	—	—
7.50-16LT	C	40	45	40	45
8.75-16.5	C	45	45	45	45
8.75-16.5	D	45	60	45	60
7.50-16LT	D	40	60	40	60

MINIMUM TIRE INFLATION PRESSURE AT GROSS VEHICLE WEIGHT RATING (GVWR) (Lbs.)

CHEVY VAN

		G11005				G11305				G11005		G11305		G21005		G21305		G31005									
GVWR (Lbs.)		4800		5400		4900		5400		5600		5600		6400		6400		6400		6900		7100		7700		8100	
TIRE	LOAD RANGE	FR	R	FR	R	FR	R	FR	R	FR	R	FR	R	FR	R	FR	R	FR	R	FR	R	FR	R	FR	R	FR	R
E78-15	B	32	28																								
F78-15	B			32	32	30	24	32	32																		
C78-15LT	C			45	45			45	45																		
GR78-15	B									32	32	32	32														
G78-15	B									32	32	32	32														
G78-15	D													38	40	38	40										
J78-15	B													32	32	32	32										
JR78-15	B													32	32	32	32										
H78-15LT	C													40	45	40	45										
8.00-16.5	C													40	45	40	45	45	45								
8.00-16.5	D																			45	65						
8.75-16.5	C																			35	45						
8.75-16.5	D																					35	50	45	60		
8.75-16.5	E																									45	75

CHEVY VAN / CUTAWAY

		CHEVY VAN G31305										CUTAWAY G31303				CUTAWAY G31603			
GVWR (Lbs.)		6600		7100		7300		7900		8400		8400		8900*		8900*		10,000*	
TIRE	LOAD RANGE	FR	R	FR	R	FR	R	FR	R	FR	R	FR	R	FR	R	FR	R	FR	R
8.00-16.5	C	45	45											45	45	45	45		
8.00-16.5	D			45	65														
8.75-16.5	C			35	45													45	45
8.75-16.5	D					35	50	45	60										
8.75-16.5	E									45	75	45	75						

*Dual Rear Tires

SPORT VAN

		G11006				G11306		G21006		G21306		G31306									
GVWR (Lbs.)		5400		5600		5600		6400		6400		6600		7100		7300		7900		8400	
TIRE	LOAD RANGE	FR	R	FR	R	FR	R	FR	R	FR	R	FR	R	FR	R	FR	R	FR	R	FR	R
F78-15	B	32	32																		
G78-15	B			32	32	32	32														
GR78-15	B			32	32	32	32														
G78-15	D							38	40	38	40										
H78-15LT	C							40	45	40	45										
J78-15	B							30	32	30	32										
JR78-15	B							30	32	30	32										
8.00,16.5	C							40	45	40	45	45	45								
8.00-16.5	D													45	65						
8.75-16.5	C													35	45						
8.75-16.5	D															35	50	45	60		
8.75-16.5	E																			45	75

SECTION 11

CHASSIS SHEET METAL

INDEX

GENERAL DESCRIPTION

The service procedures for all 1975 truck chassis sheet metal are essentially the same as those outlined in the 1974 Light Duty Truck Service Manual, Section 11, except as described below.

MAINTENANCE AND ADJUSTMENTS

To repair or replace either the hood lock assembly or the carburetor outside air inlet snorkels, the radiator grille must be removed prior to disassembly.

Refer to Section 13, Radiator and Grille, of the 1975 Light Duty Truck Service and Overhaul Manual for proper procedures.

HOOD LOCK ASSEMBLY

Service procedure for the 1975 CK Series hood lock is essentially the same as those outlined in the 1974 Light Duty Truck Service Manual, Section 11, except for the slight modification to the lock assembly due to the new radiator grille as shown in Fig. 1.

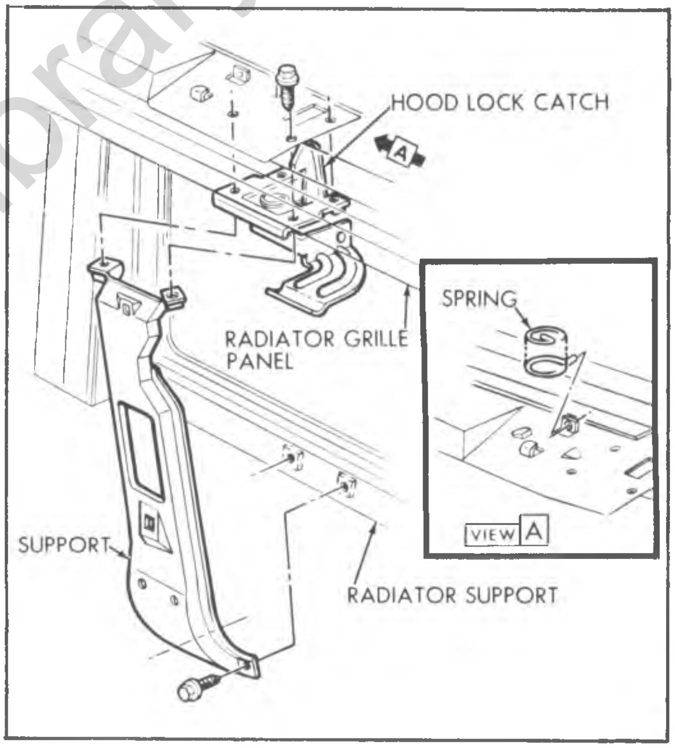


Fig. 1—Hood Lock Catch and Support—CK Series

CARBURETOR OUTSIDE AIR INLET SNORKELS (Fig. 2)

Removal

1. Raise hood and remove carburetor air duct from air snorkel by sliding duct rearward.
2. Remove two (2) screws attaching air snorkel to radiator support and remove from vehicle.

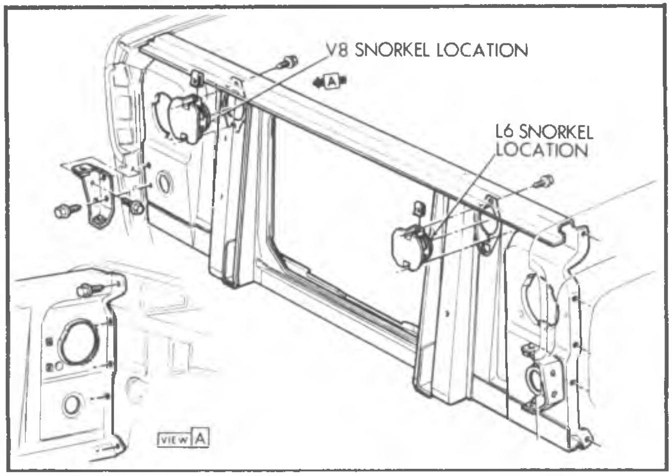


Fig. 2—Carburetor Outside Air Inlet Snorkels—CK Series

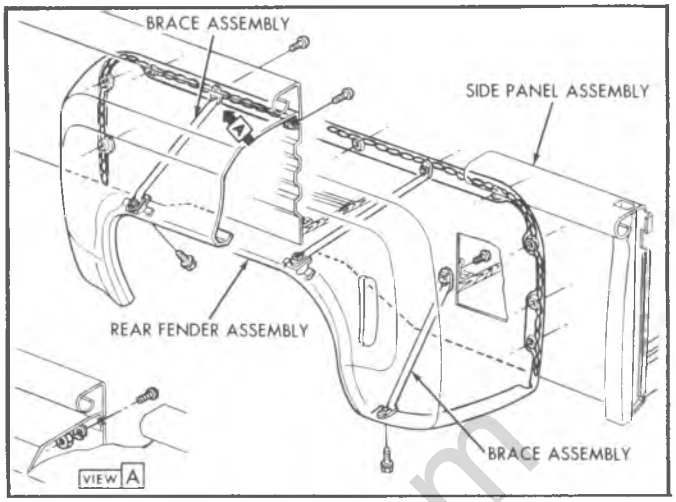


Fig. 3—Rear Fender and Brace—CK Series

Installation

Reverse removal procedure to install snorkel.

Rear Fender CK-Series

Refer to Figs. 3 and 4 for removal and installation of rear fenders and fender braces for both C and K Series Trucks.

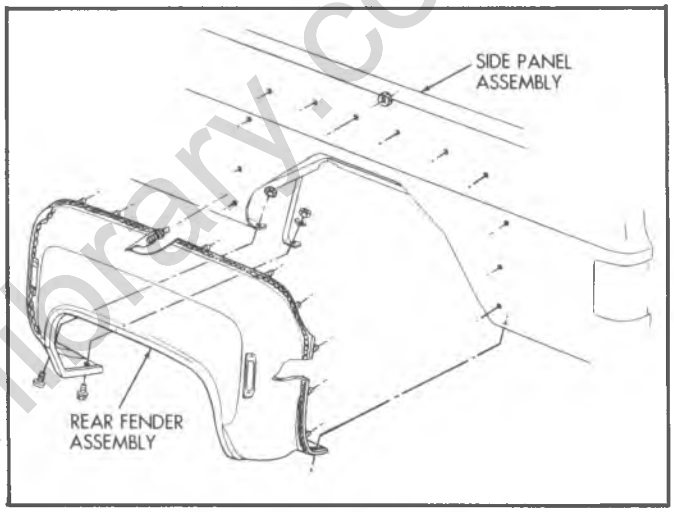


Fig. 4—Dual Wheel Fender—C Series

Running Boards CK-Series

Refer to Fig. 5 for removal and installation of running boards and running board hangers.

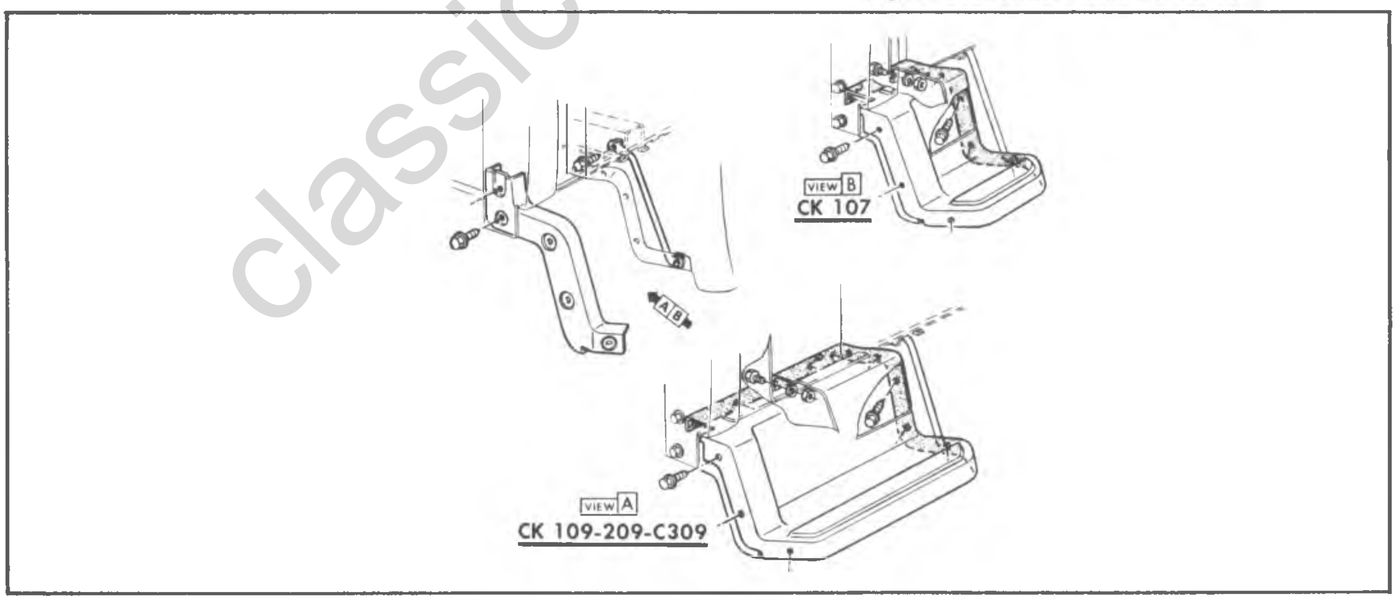


Fig. 5—Running Board, Hanger, and Brace—CK Series

SECTION 12

ELECTRICAL-BODY AND CHASSIS

NOTE: Except for the following changes, all information listed in Section 12 of the 1974 Light Duty Truck Service Manual is applicable to 1975 light duty trucks. Refer to 1974 Light Duty Truck Service Manual for any service procedure not contained herein.

LIGHTING SYSTEM

MAINTENANCE AND ADJUSTMENTS

HEADLAMP ADJUSTMENT

HEADLAMP AIMING

The headlamps must be properly aimed in order to provide maximum allowable road illumination. Headlamps should be checked for proper aim at new car predelivery, every 12 months, after installing a new sealed beam unit or if front end sheet metal is adjusted or repaired.

Some state and local authorities have special or additional requirements for headlamp aiming and these requirements should be followed.

Horizontal and vertical aiming of each sealed beam unit is provided by two adjusting screws which move the mounting ring in the body against the tension of the coil spring (fig. 1). Both circular and rectangular headlamps are aimed in the same manner. There is no adjustment for focus since the sealed beam unit is set for proper focus during manufacturing assembly.

Before headlamp aiming process begins, it is necessary to prepare vehicle as follows:

1. Remove any large amounts of mud or ice from underside of fenders.
2. Place vehicle on a fairly level flat surface. It is not necessary that this surface be exactly level.
3. Make sure tires are properly inflated.
4. Clean headlamp lenses.
5. Fuel tank should be one half full. If heavy load is normally carried in load area, it should remain there.
6. Driver should remain in vehicle or an equivalent weight placed in driver's seat.
7. "Rock" vehicle sideways so as to equalize the springs. Also check springs for sag, broken leaves or coils.

Using headlamp aiming device J-25300, aim headlamps as follows:

1. Attach a floor slope adapter—J-25300-6 (fig. 2) to each of the headlamp aimers—J-25300-1, -2 (fig. 3). The adapters will easily snap into position on the aimer when properly positioned.
2. Place aimers with floor slope adapters attached at the center line of each wheel on one side of the vehicle (fig. 4). Aimers must be placed facing each other. Make sure dials of all three adjusting knobs are set at "0" (zero).
3. Level each aimer unit by turning knob of floor slope adapter (fig. 2) either clockwise or counterclockwise until the top level vial bubble of the headlamp aimer registers in the centered (level) position.
4. Look into the top sight opening of either the front or rear aiming unit and turn horizontal knob in both directions until the split image is aligned.
5. Transfer the plus or minus reading indicated on the horizontal dial to the floor slope offset dial (fig. 3). Then return horizontal dial to a zero setting.
6. Repeat steps 3 thru 5 for other unit.

NOTE: Unless the floor is abnormally sloped, it is not necessary to obtain floor slope readings for both sides of the vehicle. If for some reason floor is

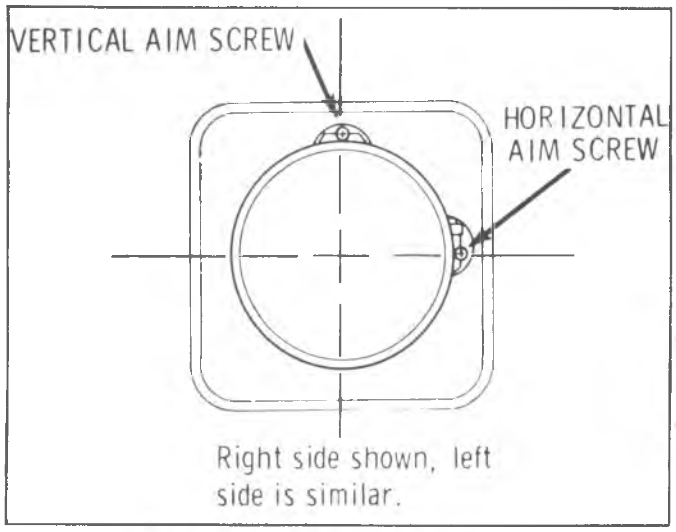


Fig. 1—Headlamp Aiming Screws

abnormally sloped, it may require that different readings be used for each side of the vehicle. In this instance, determine the floor level for BOTH sides of the vehicle. It is then necessary to set the floor slope offset dial of EACH aimer half-way between the two readings obtained. For instance:

+5 and −5 Readings Equal 0 Average
+4 and −2 Readings Equal +1 Average
+2 and −4 Readings Equal −1 Average

Also, if one area is regularly used to aim headlamps the floor slope adjustment procedures can be eliminated by using tape or paint to indicate on the floor the center line for the rear wheel of all vehicles. Then check the floor level for several vehicles with varying wheelbase measurements. Indicate on the floor a front wheel center line for each wheelbase along with the plus or minus reading for that position. Thereafter, each time the headlamps are aimed, merely place the rear wheels of the vehicle on the rear wheel center line and transfer the plus or minus reading of the front wheel center line to the floor slope dial of the aiming unit.

7. Remove floor slope adapters from each unit and attach a headlamp adapter (fig. 5) as determined by type of headlamps on the vehicle. There is an adapter for all standard size and shape sealed beam units.
8. Position aimer with headlamp adapter attached so that the three guide points of the lamp are in contact with the three steel inserts inside the headlamp adapter. Secure aimer to headlamp by pushing locking handle (fig. 3) forward to engage rubber suction cap and then immediately pull locking handle rearward until it locks in place. Headlamp aimers must always be used in pairs and installed so that they face each other (fig. 6).
9. Check to make sure floor slope dials of the aimers obtained in step 5 has not been disturbed. Make sure horizontal dial is at zero.
10. Look into top sight opening of the aimer to see that the split image target lines are visible in the viewing port. If necessary, rotate each aimer slightly to locate target.
11. Turn horizontal adjusting screw of headlamp (fig. 1) until split image of target line appears in sight opening as one solid line. To remove "backlash" make final adjustment by turning horizontal adjusting screw in a clockwise direction.
12. Repeat steps 9 thru 11 for other aimer.
13. Make sure vertical dial is at zero.

NOTE: A zero setting is generally required. Some state or local authorities have special requirements. Consult those authorities and use the special requirement as required.

14. Turn headlamp vertical screw (fig. 1) until the top level vial bubble registers in the centered (level) position.
15. Repeat steps 13 and 14 for opposite aimer and headlamp.
16. Recheck target alignment on both aimers and readjust horizontal aim if necessary.
17. Remove aimers by holding aimer securely with one hand while pressing the vacuum release button located on locking handle of aimer with the other hand.

If headlamp aiming equipment is not available, use procedure described in Section 12 of 1974 Service Manual.

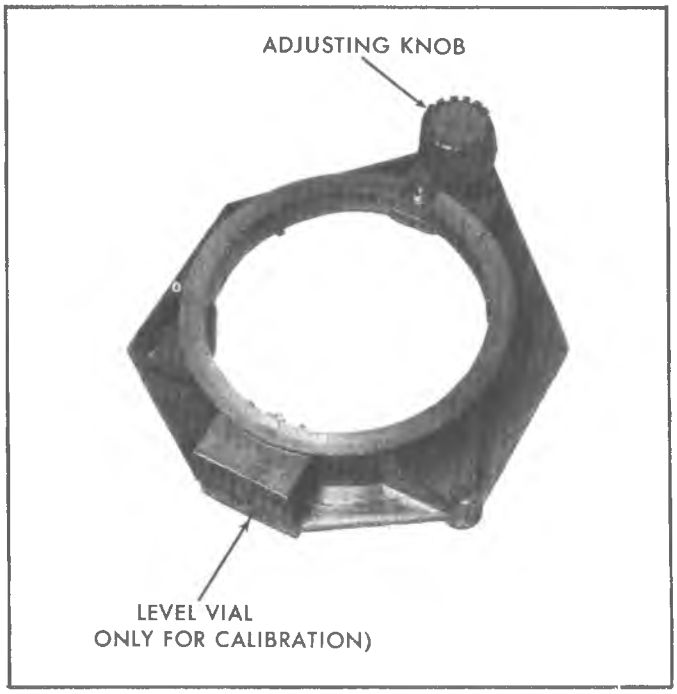


Fig. 2—Floor Slope Adapter J-25300-6

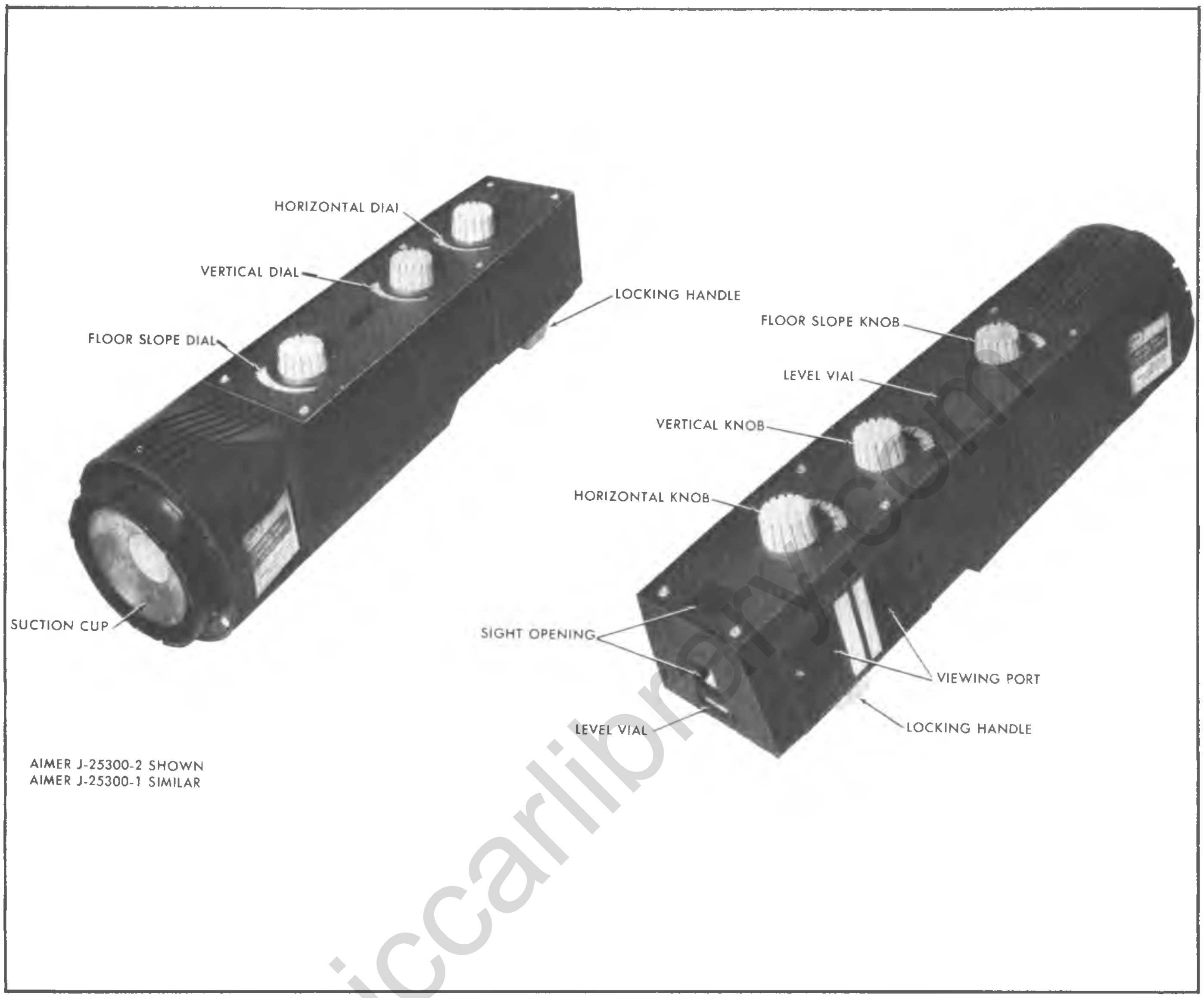


Fig. 3—Headlamp Aimer

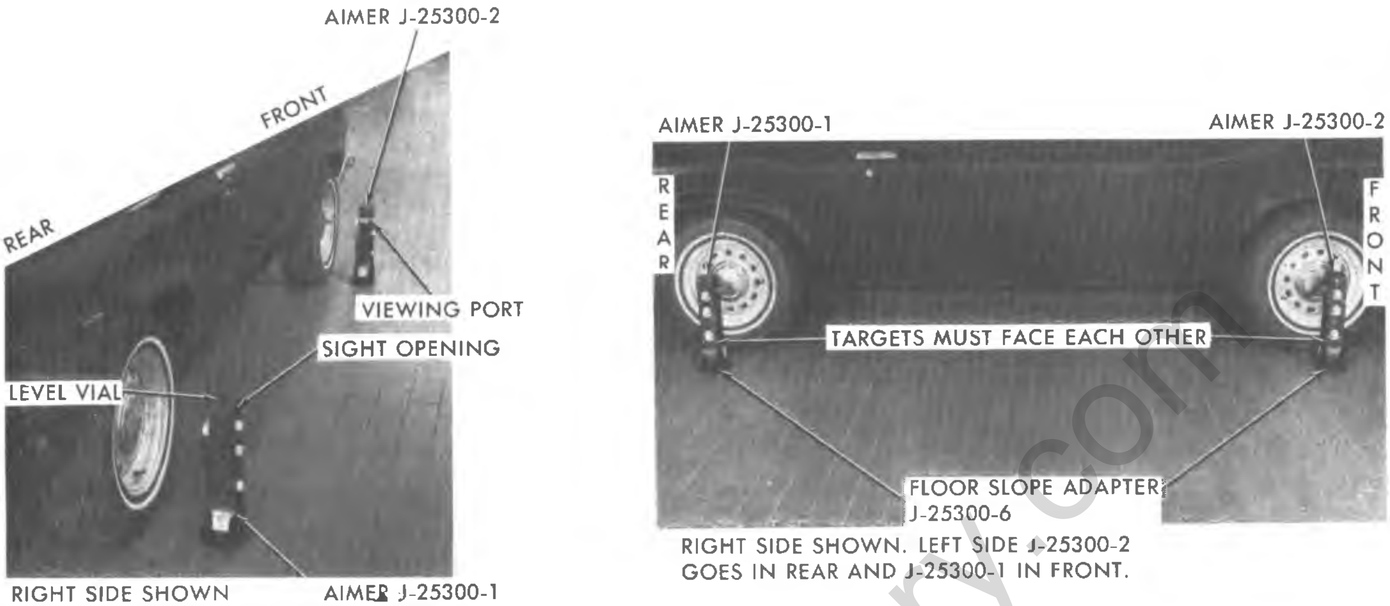


Fig. 4—Floor Slope Adjustment (Typical)

Fig. 5—Headlamp Adapters

Fig. 6—Headlamp Aiming (Typical)

SERVICE OPERATIONS

HEADLAMPS WARNING BUZZER

Replacement (Fig. 7)

1. Pull headlamp warning buzzer from LPS (Lamps) socket of fuse panel.
2. Disconnect electrical connector from ACC (Accessories) of fuse panel.
3. Disconnect electrical connector to instrument panel harness.
4. Install replacement headlamp warning buzzer in reverse sequence of removal.

WIRING DIAGRAMS

Truck wiring diagrams are shown in 1975 Light, Medium and Heavy Duty Truck Wiring Diagram Manual.

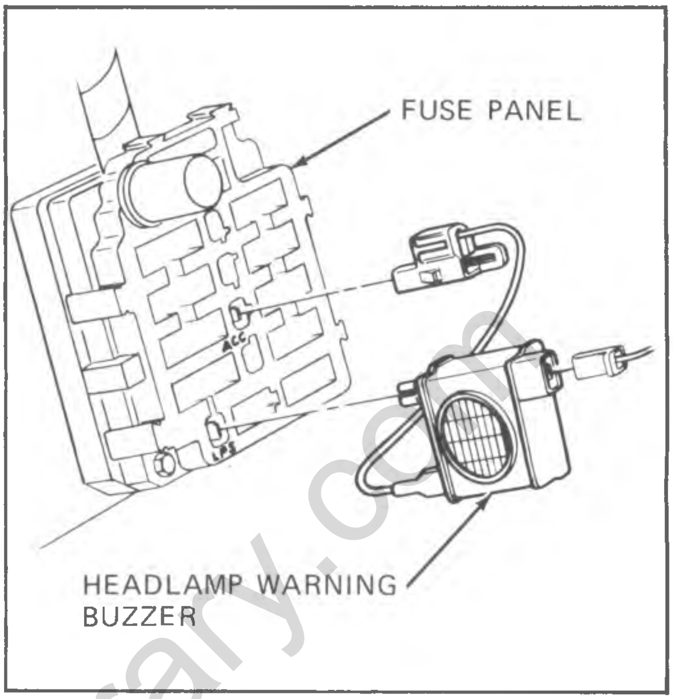


Fig. 7—Headlamp Warning Buzzer

SECTION 13

RADIATOR AND GRILLE

INDEX

GENERAL DESCRIPTION

All service procedures outlined in the 1974 Light Duty Truck Service Manual, Section 13, Radiator and Grille are essentially the same for 1975 with the exception of the following items.

MAINTENANCE AND ADJUSTMENTS

RADIATOR REPLACEMENT

(All Except P30 (32) Chassis)

The removal of the 1975 radiator is identical to the procedure outlined in the 1974 Light Duty Truck Service Manual.

The installation procedure has been revised for 1975 as follows:

Steps 1-5 are the same as outlined in 1974 Service Manual.

6. Remove coolant recovery tank and empty of fluid. Clean inside of tank thoroughly with detergent and water, scrubbing sides clean, and then flush with clean water and drain.
7. Reinstall tank.
8. (C-K Models) Insert coolant recovery hose in tank as far as the first white stripe 13.5″ (as shown in Fig. 1).
9. Add sufficient ethylene glycol coolant, meeting GM specification 1899-M, to provide the required freezing and corrosion protection - at least a 50 percent solution (−20°F). Completely fill radiator and add sufficient coolant to the recovery tank to raise the level to the "Cold Level" mark. Reinstall recovery tank cap.
10. Pressure Test system and radiator cap for proper pressure holding capacity (15 psi). If replacement of cap is required, use the proper cap specified for your vehicle.

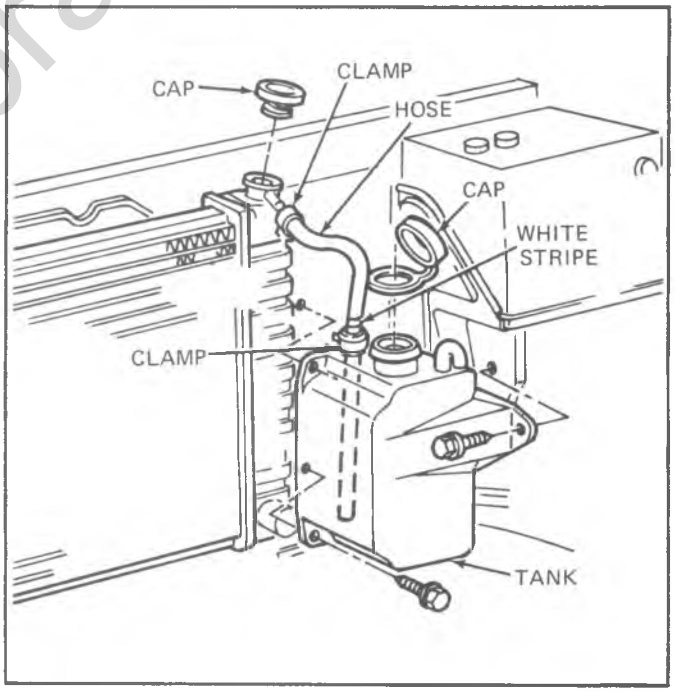


Fig. 1—Coolant Recovery Tank—CK Series

GRILLE

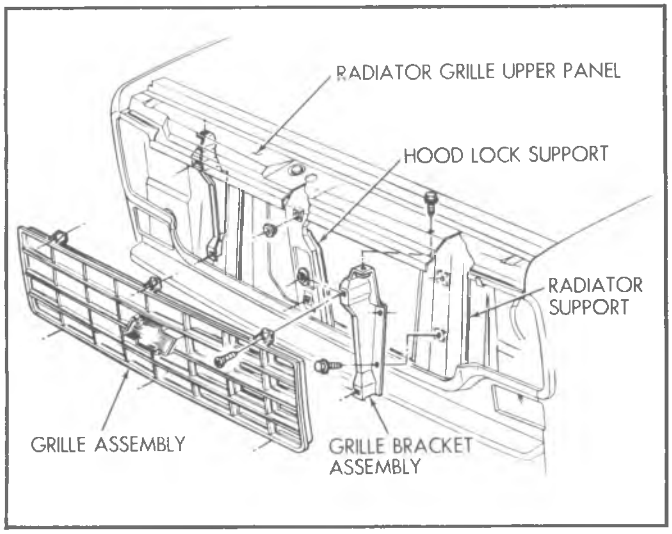


Fig. 2—Radiator Grille—CK Series

SERVICE PROCEDURES

Grille - CK Series (Fig. 2)

Removal

1. Remove the six (6) screws retaining grille to brackets and support assembly.
2. Remove bezels as required.

Installation

Reverse removal procedure.

CAUTION: *Grille is made of plastic. Do not use excessive heat or harsh chemicals to clean in this area or distortion and/or paint peeling could occur.*

COOLANT RECOVERY SYSTEM

Removal and Installation (Fig. 1).

Refer to Fig. 1 for removal and installation of coolant recovery system on CK Series.

SECTION 15

ACCESSORIES

NOTE: Except for the following changes, all information listed in Section 15 of the 1974 Light Duty Truck Service Manual is applicable to 1975 light duty trucks. Refer to 1974 Light Duty Truck Service Manual for any service procedure not contained herein.

CRUISE MASTER

INDEX

GENERAL DESCRIPTION

The Cruise Master is a speed control system which employs engine manifold vacuum to power the throttle servo unit. The servo moves the throttle, when speed adjustment is necessary, by receiving a varying amount of controlled vacuum from the regulator unit. The speedometer cable (from the transmission) drives the regulator, and a cable (from the regulator) drives the instrument panel speedometer. The engagement of the regulator unit is controlled by an engagement switch located at the end of the turn signal lever. On "Dealer Installed Cruise Systems", the engage switch is mounted on the lower part of the instrument panel to the left of the steering column. Two brake release switches are provided: an electric switch disengages the regulator unit and a vacuum valve decreases the vacuum in the servo unit to quickly return the throttle to idle position.

The operation of each unit of the system and the operation of the entire system under various circumstances is described under "Theory of Operation" below.

THEORY OF OPERATION

The purpose of the Cruise Master system is to allow the driver to maintain a constant highway speed without the necessity of continually applying foot pressure to the accelerator pedal. Speed changes are easily made and override features allow the vehicle to be stopped, slowed or accelerated as described below.

Engaging the Cruise System

The driver accelerates to the speed at which he desires to cruise and partially depresses and releases the cruise control engagement switch button located at the end of the directional signal lever (on dealer installed systems, this switch will be on the instrument panel). The cruise system takes over speed control, and within engine limitation, maintains this speed regardless of changes in terrain.

The Engagement Switch button performs these functions:

1. Above 30 mph, when partially depressed and released, it engages the cruise system.
2. When depressed fully and held there, it disengages the system.

3. When released slowly from the fully depressed position, it will engage the system at the existing speed and cruise at that speed (above 30 mph).

NOTE: See Fig. 1C "Engage Switch Operation".

Speed Changes

Override-The accelerator pedal may be depressed at any time to override the cruise system. Release of the accelerator pedal will return the vehicle to the previous cruise speed.

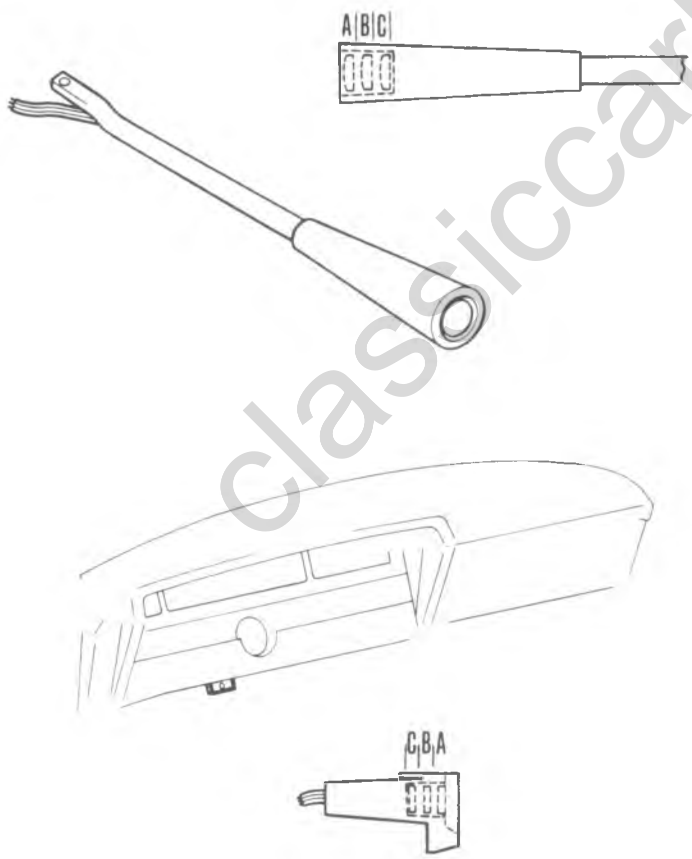
To Cruise At A Higher Speed-Depress the accelerator pedal to reach the new desired speed. Then, fully depress and slowly release the cruise control engagement switch button. The system re-engages at the higher speed when the button is slowly released.

To Cruise At A Lower Speed-Disengage the system by depressing the engagement switch button fully and holding it there until the vehicle has decelerated to the new desired speed; then release the button slowly. The system re-engages at the lower speed when the button is slowly released.

CRUISE MASTER UNITS

Figures 3C and 4C show the units in the installed position on the vehicles.

1. The Engagement Switch, which is located at the end of the directional signal lever (or bottom on instrument panel), is used to control the system and for upward and downward speed adjustments.
2. The Regulator (fig. 2C) is mounted in the speedometer cable line. It is a combination speed sensing device and control unit. When engaged, it senses vehicle speed and positions the Servo Unit to maintain the selected speed.
3. The Servo Unit is mounted on the left front inner fender and is connected by a cable to the throttle linkage. It opens or closes the throttle as dictated by the Regulator.
4. The Cruise Brake Release Switch, which is mounted on the brake pedal bracket, disengages the system electrically when the brake pedal is depressed.
5. The Cruise Brake Release Valve, which is mounted



THE CRUISE CONTROL ENGAGE SWITCH ASSEMBLIES, BOTH TURN SIGNAL & INSTRUMENT PANEL MOUNTED TYPES, INCORPORATE THREE POSITION SWITCHES. THESE POSITIONS ARE:
(A) THE "RELEASED" OR NORMAL POSITION
(B) THE "ENGAGE" POSITION
(C) THE "TRIM-DOWN" POSITION.

PARTIALLY DEPRESSING THE ENGAGE SWITCH WILL ACTIVATE THE SYSTEM AND IT WILL REMAIN ACTIVITED WHEN THE SWITCH IS RELEASED. THE CRUISE SYSTEM IS DEACTIVATED WHEN THE BRAKES ARE APPLIED OR WHEN THE ENGAGE SWITCH IS DEPRESSED FULLY AND HELD IN THE "TRIM-DOWN" POSITION.

THE "TRIM-DOWN" SWITCH POSITION IS NORMALLY USED TO DECREASE THE CRUISING SPEED. WHILE THE SWITCH IS HELD IN THE "TRIM-DOWN" POSITION THE CRUISE SYSTEM IS "OFF" AND THE CAR SPEED WILL GRADUALLY DECREASE. WHEN THE DESIRED CRUISING SPEED IS REACHED, THE SWITCH IS SLOWLY RELEASED AND THE CRUISE SYSTEM WILL RE-ENGAGE. IF THE SWITCH IS RELEASED FROM THE "TRIM-DOWN" POSITION VERY RAPIDLY, IT IS QUITE LIKELY THAT THE SYSTEM WILL NOT RE-ENGAGE. THIS IS NORMAL AND IS AVOIDED BY A SLOWER, MORE DELIBERATE RELEASE OF THE SWITCH FROM THE "TRIM-DOWN" POSITION.

NOTE: A SPEED-SWITCH BUILT INTO THE REGULATOR ASSEMBLY PREVENTS ENGAGING THE CRUISE SYSTEM BELOW APPROX. 30 MPH.

Fig. 1C--Cruise Master Engagement Switches on the brake pedal bracket, disengages the system pneumatically when the brake pedal is depressed.

6. The Cable and Casing Assemblies drive the regulator and speedometer.

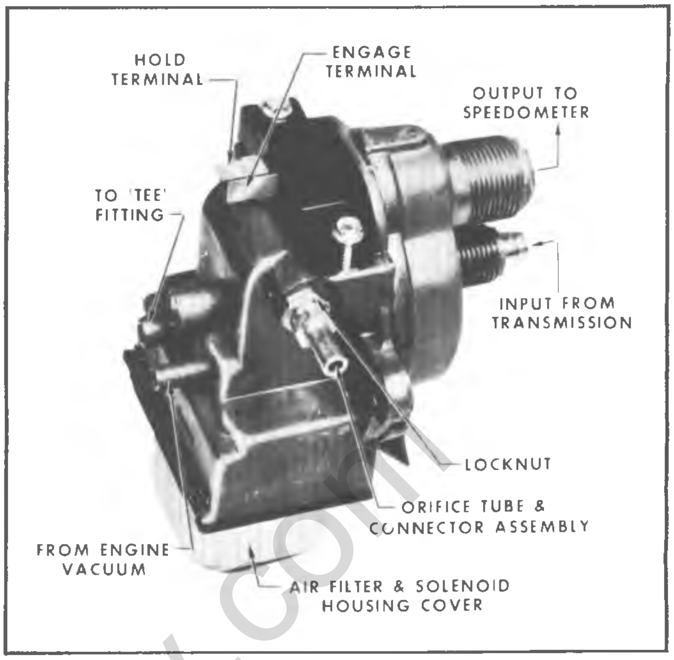


Fig. 2C--Regulator Unit

MAINTENANCE AND ADJUSTMENTS

The components of the Cruise-Master System are designed to be replaced should they become inoperative. The Regulator is calibrated in such a manner during manufacturing that overhaul operations are impractical. However, one adjustment may be made to the Regulator to correct speed drop or increase at the time of engagement.

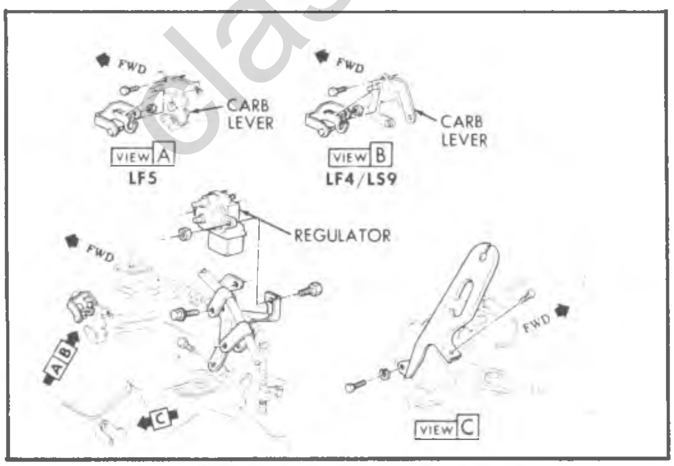


Fig. 3C—Regulator and Brackets (G Truck)

REGULATOR (FIG. 3C)

One regulator adjustment is possible - Engagement Cruising Speed Zeroing (to remove any difference between engagement and cruising speed). No regulator adjustment should be made, however, until the Servo Cable adjustment has been checked and vacuum hoses are checked for leaks, kinks, or other restrictions.

If the vehicle cruises at a speed a few mph above or below the engagement speed, this error can be corrected with a simple adjustment of the orifice tube in the regulator (see fig. 2C).

CAUTION: *Never remove orifice tube from casting. It cannot be reinstalled once it has been removed.*

1. To check cruise speed error, engage Cruise-Master at 60 mph.
2. If vehicle cruises **below** engagement speed, screw orifice tube **outward**
3. If vehicle cruises **above** engagement speed, screw orifice tube **inward**

NOTE: Each 1/4 turn of the orifice tube will change cruise speed approximately one mph. Snug-up lock nut after each adjustment.

If a Regulator is found to be defective and not simply out-of-adjustment, it must be replaced. During replacement, check the hoses which connect to the Regulator and replace any which are cracked or deteriorated.

SERVO UNIT (FIG. 4C)

Before adjusting the Servo Cable, make sure the carburetor is set at its lowest idle throttle position by manually setting the fast idle cam at its lowest step with the ignition switch "OFF". Adjust the cable so there is as little lost motion at the Servo as possible (see Fig. 4C).

If the Servo Unit is found to be defective, replacement is required. Note the condition of the hoses and replace any which are cracked or deteriorated.

BRAKE RELEASE SWITCHES (Fig. 5C)

Electric

The Cruise Master brake release switch electrical contacts must be switched open when the brake pedal is depressed .38" to .64", measured at the brake pedal.

An inoperative switch must be replaced. Switch replacement procedure is similar to standard brake lamp switch replacement.

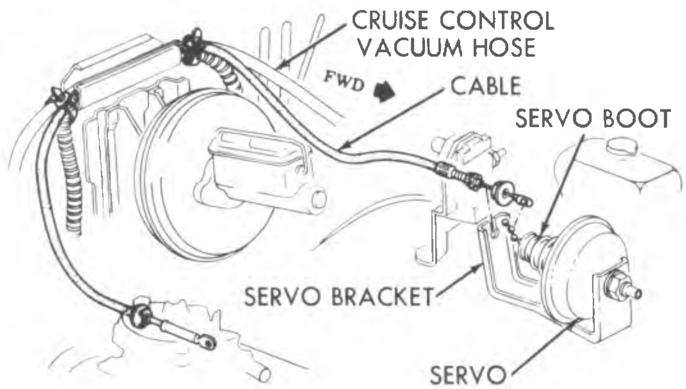
Vacuum

The vacuum valve plunger must clear the pedal arm when the arm is moved 5/16 inch, measured at the switch (fig. 6C).

An inoperative (sticking, plugged, or leaking) vacuum valve must be replaced. Vacuum valve replacement is similar to brake lamp switch replacement. Be certain that the hose to the valve is connected firmly and is not cracked or deteriorated.

COLUMN MOUNTED ENGAGEMENT SWITCH

The engagement switch is serviced only by replacement of the turn signal lever assembly.



CONTROL CABLE ADJUSTMENT

With Cable installed to Cable Bracket and Carburetor, install Cable to Servo Bracket. Using second ball on Servo Chain, install Servo Chain on Cable.

With throttle completely closed (ignition off and fast idle Cam off) adjust Cable Jam Nuts until Servo Chain is almost tight (some slack). Tighten Jam Nuts to specified torque, then remove plastic retainer (not shown) (used to retain boot in depressed position) and pull rubber boot (part of Servo) over washer (part of Cable).

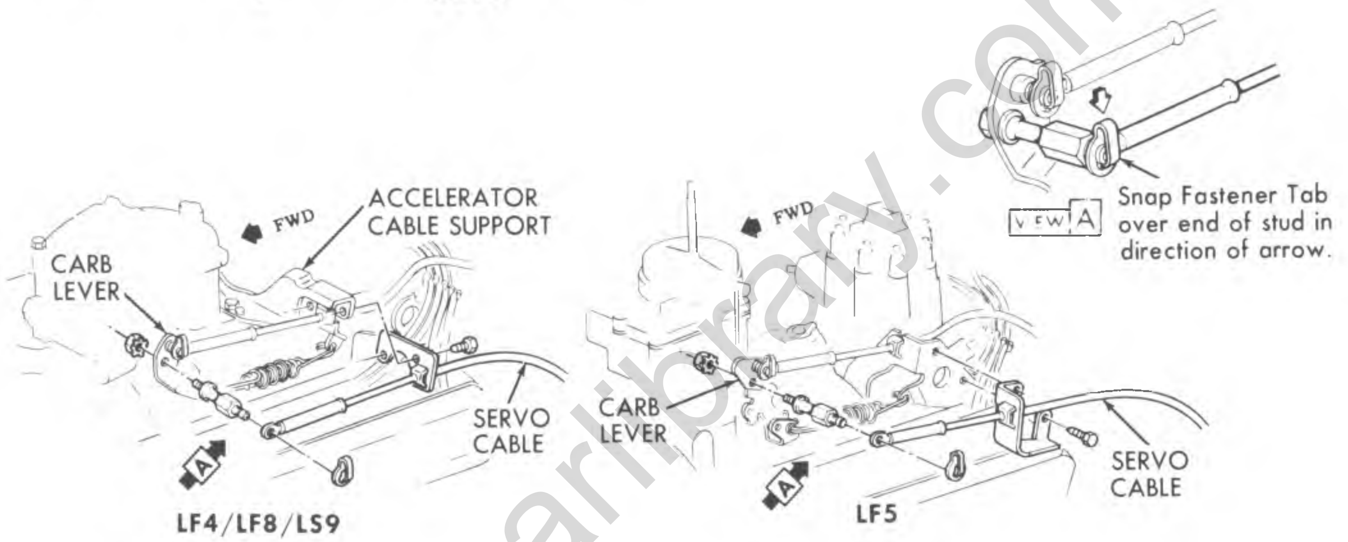


Fig. 4C--Servo Composite (C-K Trucks)

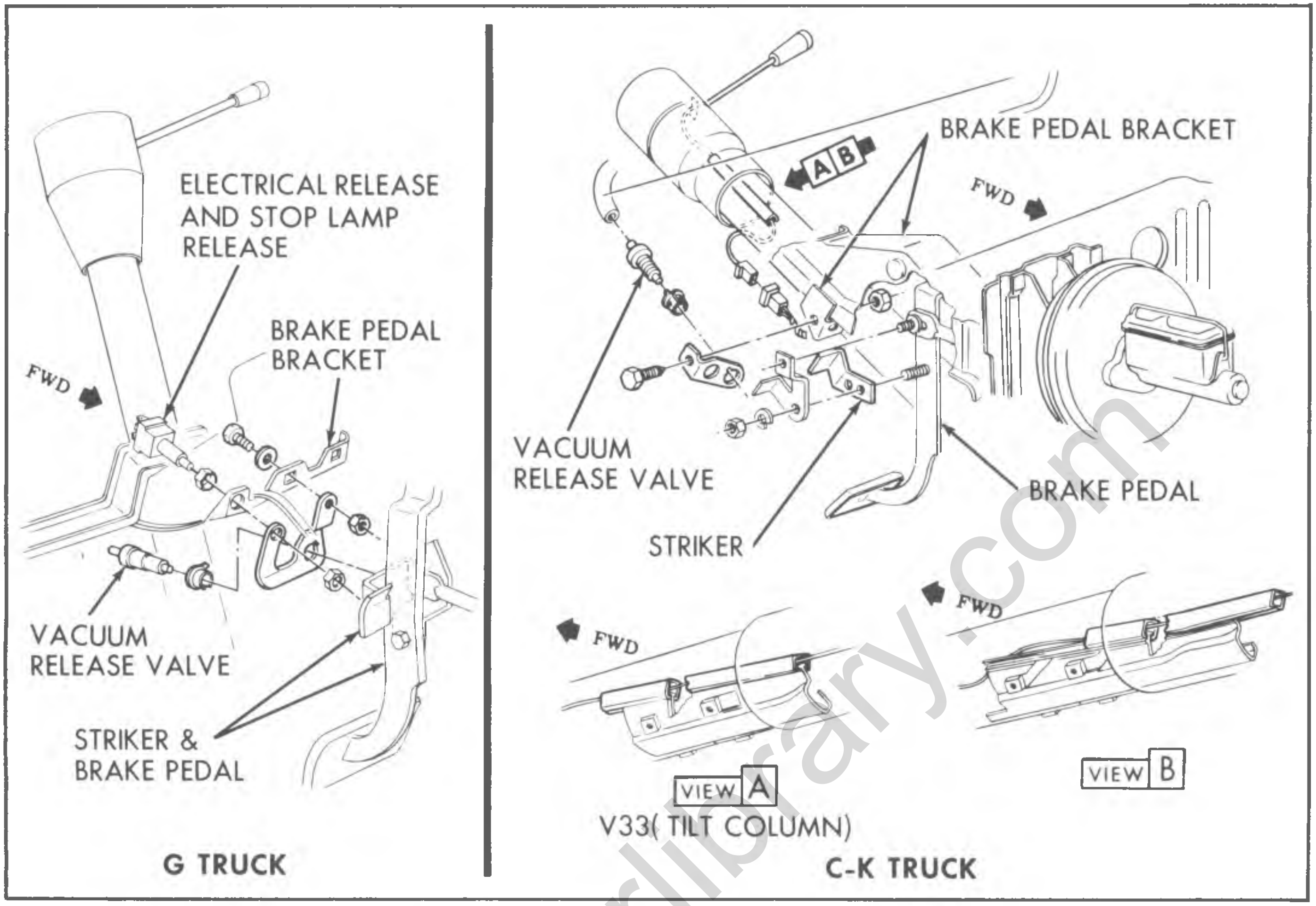
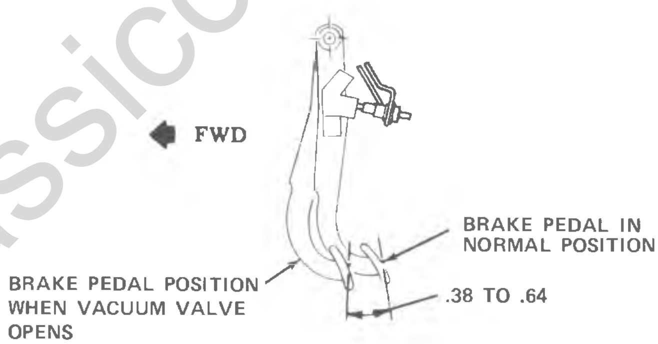


Fig. 5C--Release Switches, Valve and Brackets



INSTALLATION OF SELF-ADJUSTING VACUUM RELEASE VALVE

1. Install mounting clip into bracket.
2. Depress brake pedal & push valve into clip until shoulder on valve asm bottoms out against clip.
3. Adjust valve by bringing pedal to normal position so that valve is open when pedal is depressed to dimension shown.

Fig. 6C—Vacuum Valve

COMPONENT PART REPLACEMENT

REGULATOR

Replacement

1. Disconnect battery ground cable.
2. Disconnect speedometer cables at regulator.
3. Disconnect vacuum and wiring harness at regulator body.
4. Remove regulator to bracket screws and remove regulator.
5. To install, reverse Steps 1-4 above.

SERVO

Replacement

1. Disconnect battery ground cable.
2. Disconnect vacuum line at servo can.
3. Remove servo cover. Disconnect ball chain from cable retainer.
4. Remove servo to bracket screw(s) and remove servo.
5. To install, reverse Steps 1-4 above.
6. Adjust the servo cable as outlined in Figure 4C.

COLUMN MOUNTED ENGAGEMENT SWITCH

Removal

1. Disconnect the battery ground cable.
2. Disconnect cruise master engagement switch wiring harness plug on steering column.
3. Remove plastic protector from cruise master wiring harness on column.
4. Remove turn signal lever (see Section 9 of this Manual).
5. Connect a 15" piece of piano wire to cruise master wiring harness plug for installation before easing turn signal lever assembly up and out of the column.

Installation

1. Attach new engagement switch harness plug to piano wire routed through column.
2. Pull connector and wire gently down column to prevent scraping wire insulation.
3. Install turn signal lever (see Section 9 of this Manual).
4. Slide plastic wiring protector over harness and up column.
5. Connect cruise master wiring harness on column.
6. Connect battery ground cable.

DIAGNOSIS

ELECTRICAL SYSTEM TROUBLESHOOTING

1. Check fuse and connector.
2. Check electric brake switch as follows:
   a. Unplug connector at switch.
   b. Connect ohmmeter across cruise master contacts on brake switch. The ohmmeter must indicate no continuity when the pedal is depressed and continuity when pedal is released. The cruise release brake switch (electric) is adjusted as is the standard stop light brake switch.
   c. Replace electric brake switch if needed.
3. Check clutch release switch (manual transmission only) same as electric release switch above.

Engagement Switch Test

Check engagement switch and connecting wiring as follows: Unplug engagement switch connector (brown, blue, black) at electrical wiring harness connector then perform the following tests (fig. 7C).

Test#1—Connect ohmmeter between terminal #1 (brown wire) and terminal#2 (blue wire). Continuity shall be maintained until switch is depressed all the way in.

Test#2—Connect ohmmeter between terminal#1 (brown wire) and terminal#3 (black wire). No continuity shall be shown; however, when the button is partially depressed, continuity shall be indicated. When the button is pressed all the way down, no continuity shall be shown.

Test#3—Connect ohmmeter between terminal#2 (blue wire) and terminal#3 (black wire). Button released, no continuity; however, when the button is depressed partially and fully, continuity shall be shown.

Harness Test (see Fig. 7C)

1. Disconnect engage switch wire harness connector from the main harness connector (red, brown/white, and white wires).

2. Connect ohmmeter between point C (brown/white stripe wire in main wire harness) and ground. Make sure the Regulator is well grounded to the chassis. The ohmmeter should read between 42 and 49 ohms. If a resistance either above or below the value indicated is shown, then disconnect the connector from the Regulator and measure the resistance of the brown/white stripe wire from point C to D. It should measure 40 ohms ±2 ohms.
3. If a resistance either above or below the value indicated is shown, the main wiring harness should be replaced.

NOTE: When disconnecting or reconnecting the main wiring harness connector from the Regulator, care should be exercised so as not to damage the blade connectors or the wiring harness. The disconnect may be facilitated by prying carefully on the plastic connector with a small screwdriver.

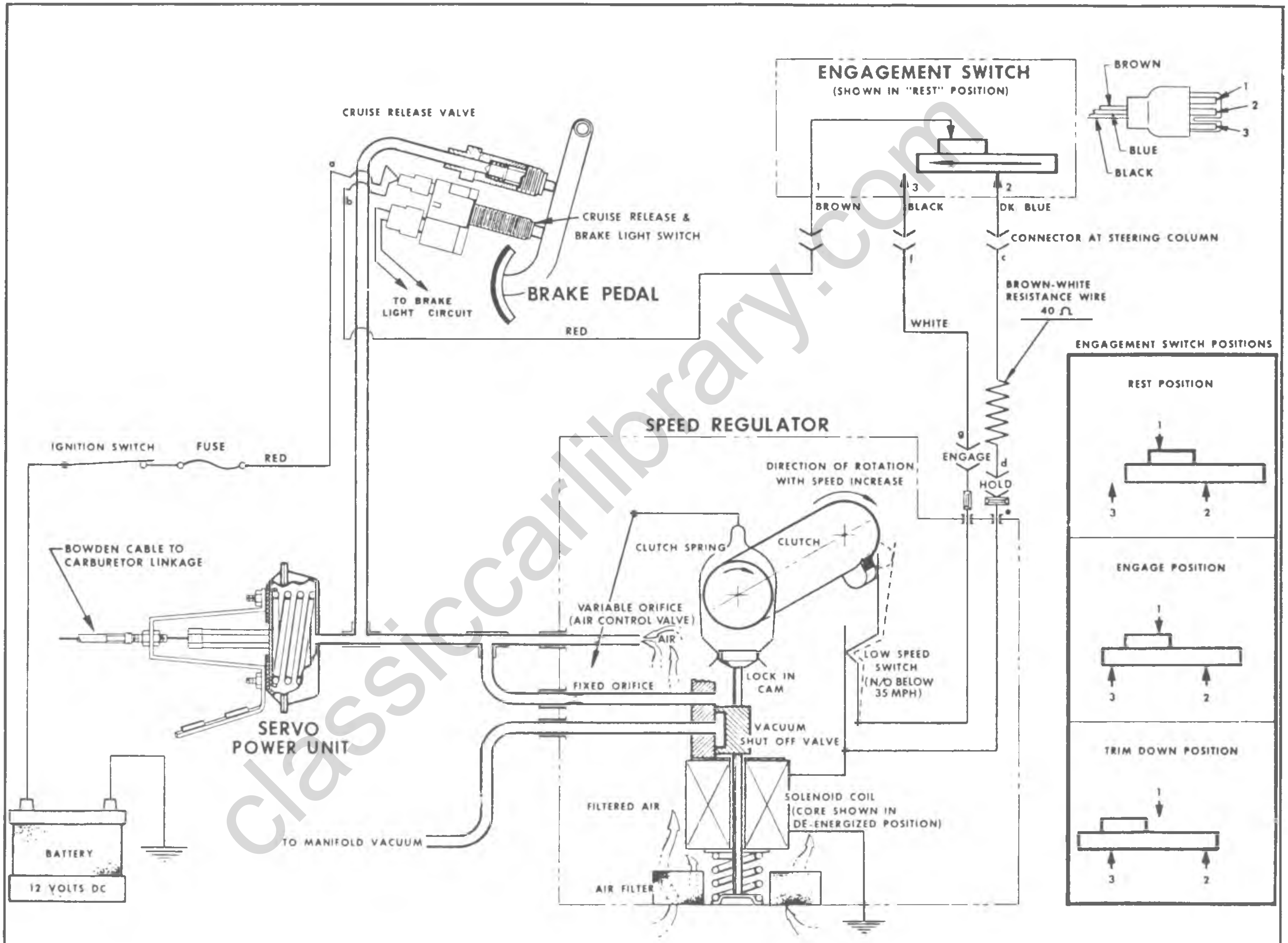
4. Measuring the solenoid coil circuit resistance between point E (Hold Terminal) and ground, the ideal resistance should be between 5 and 6 ohms. A reading of less than 4 ohms indicates shorting in the coil circuit. A reading of more than 7 ohms indicates excessive resistance in the coil circuit. Either extremity indicates replacement of the Regulator assembly. The main harness wiring from point F to G (white wire) should also be checked for continuity.

Servo and Vacuum System Test

To determine the condition of the diaphragm, remove hose from the Servo Unit and apply 14 inches of vacuum to the tube opening and hold in for one minute. The vacuum shall not leak down more than 5 inches of vacuum in one minute. If leakage is detected, replace the Servo. To utilize engine as a vacuum source, proceed as follows:

1. Disconnect Servo cable at carburetor and vacuum hose from the Servo, then connect engine vacuum directly to the Servo fitting.
2. Note position of Servo diaphragm.
3. Start engine--the diaphragm should pull in.
4. Clamp off engine vacuum supply line and check for leakage.

The cruise release brake valve (vacuum) and connecting hoses can likewise be checked using a vacuum pump.



ELECTRO-PNEUMATIC SCHEMATIC DIAGRAM, CRUISE MASTER SYSTEM

Fig. 7C--Electro-Pneumatic Schematic

CRUISE MASTER TROUBLESHOOTING

CHECK I FOR SYSTEMS WITH ERRATIC CRUISE PERFORMANCE

CHECK II FOR INOPERATIVE SYSTEMS MAKE ALL TESTS WITH TRANSMISSION SELECTOR IN "PARK" & PARKING BRAKE ON EXCEPT WHERE INDICATED OTHERWISE. RECONNECT ANY DISCONNECTED HOSES AND/OR ELECTRICAL CONNECTORS IN PROPER MANNER AT THE COMPLETION OF TEST.

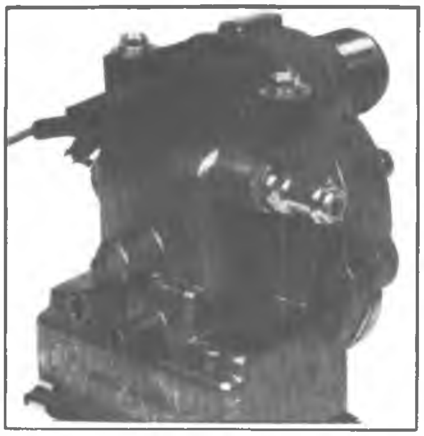


FIG. 8

FIG. 9

CHECK I

1. CHECK SERVO CABLE ADJUSTMENT - MUST HAVE MINIMUM AMOUNT OF LOST MOTION (SEE SERVICE ADJUSTMENT PROCEDURE, FIG. 4)
2. CHECK FOR PINCHED, KINKED, PLUGGED, OR DAMAGED VACUUM HOSES. ALSO CHECK VACUUM FITTINGS.
3. CHECK SPEEDOMETER CABLE ROUTING. IT MUST NOT BE KINKED OR HAVE TOO SHARP A TURNING RADIUS (NOT LESS THAN 6" RADIUS). CHECK DRIVE CABLE FOR DISTORTED OR BENT TIPS. FERRULES MUST BE SNUG.
4. CHECK FOR A BINDING THROTTLE LINKAGE CONDITION.
5. CHECK ADJUSTMENT OF BRAKE RELEASE SWITCH & VACUUM RELEASE VALVE. (SEE SERVICE & ADJUSTMENTS)
6. CHECK FOR PROPER OPERATING PROCEDURE OF THE ENGAGE SWITCH (SEE FIG. 1)
7. IF STEPS 1 THROUGH 6 DO NOT SOLVE THE PROBLEM PROCEED WITH CHECK II.

SPECIAL NOTE PERTAINING TO ENGAGEMENT-CRUISING SPEED ZEROING.

IF THE VEHICLE CRUISES BELOW ENGAGEMENT SPEED, SCREW THE ORIFICE TUBE OUTWARD. IF THE VEHICLE CRUISES ABOVE THE ENGAGEMENT SPEED, SCREW THE ORIFICE TUBE INWARD. EACH 1/4 TURN WILL CHANGE THE SPEED APPROXIMATELY ONE MPH. ENGAGEMENT ACCURACY TESTING TO BE DONE AT 60 MPH. SNUG UP LOCK NUT AFTER EACH ADJUSTMENT.

CAUTION: DO NOT REMOVE ORIFICE TUBE FROM CASTING.

Fig. 8C--System Diagnosis Chart No. 1

CHECK II

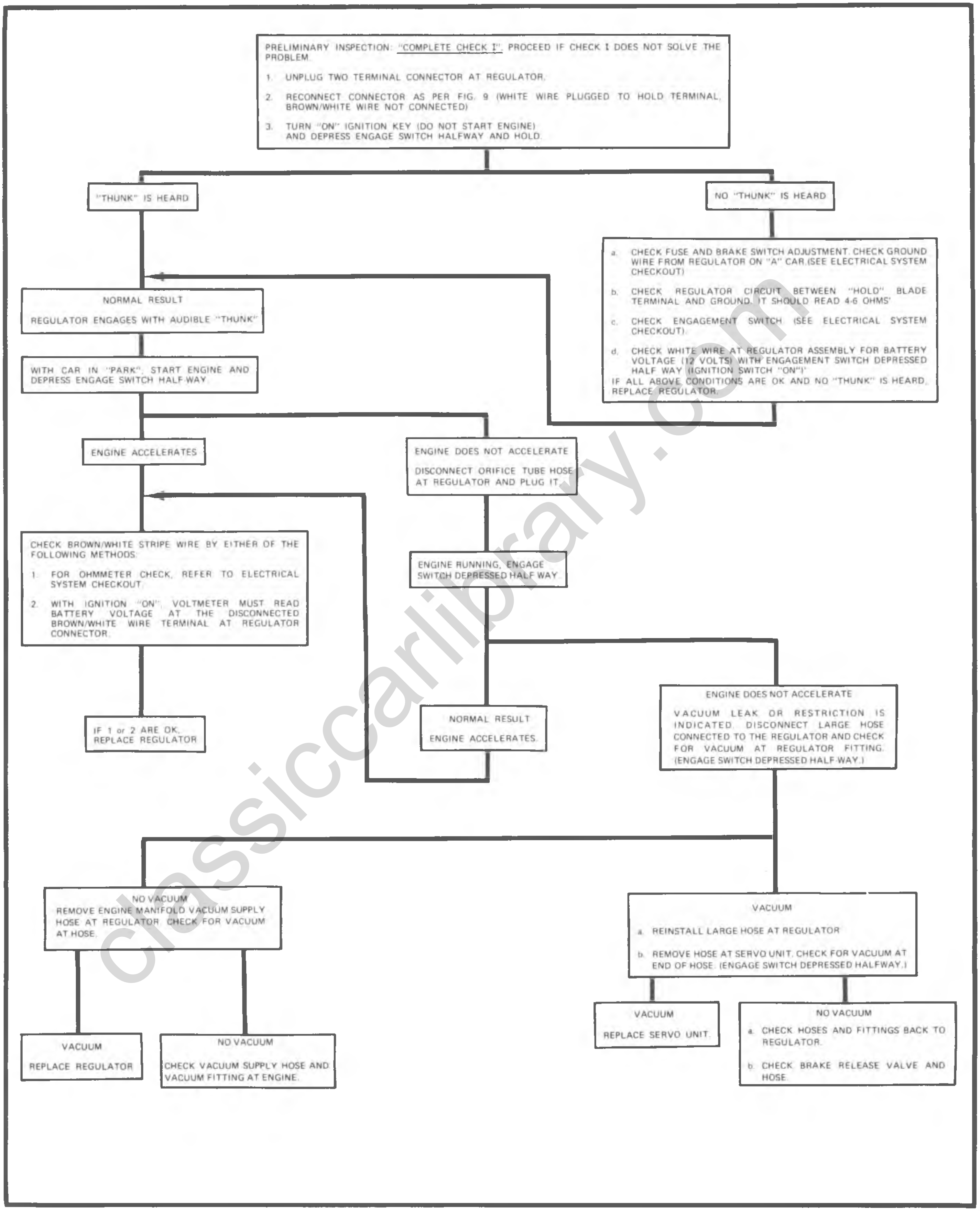


Fig. 9C--System Diagnosis Chart No.2

1975
10-30 SERIES
TRUCK
CHASSIS SERVICE
and
OVERHAUL MANUAL
SUPPLEMENT

OVERHAUL SECTION

The overhaul section of this manual includes new or revised procedures involved in disassembly and assembly of major components.

CHEVROLET MOTOR DIVISION

General Motors Corporation

DETROIT, MICHIGAN

SECTION INDEX

 Printed In U.S.A.

SECTION 1

AIR CONDITIONING

CONTENTS OF THIS SECTION

AXIAL SIX-CYLINDER COMPRESSOR

Refer to 1974 Overhaul Manual for overhaul procedures on the axial six-cylinder compressor.

The shaft locknut torque should be changed to read 15 foot pounds.

Use only refrigeration oil, not petroleum jelly, when assembling pistons and balls.

RADIAL FOUR-CYLINDER COMPRESSOR

GENERAL

When servicing a compressor, it is essential that steps be taken to prevent dirt or foreign material from getting on or into compressor parts and system during disassembly or reassembly of compressor. Clean tools, a clean workbench and a clean work area are very important for proper service. The compressor connection areas and exterior of compressor should be cleaned off as much as possible prior to any "on vehicle" repairs or removing compressor for workbench service. The parts must be kept clean at all times and any parts to be reassembled should be cleaned with clean solvent (trichlorethylene, naptha or stoddard solvent) and dried with dry air. When necessary to use a cloth on any part, it should be of a non-lint producing type. Refer to Figure 1 for the exploded view of the compressor parts and nomenclature.

When a compressor is removed from the vehicle for servicing, the amount of oil remaining in the compressor should be drained through compressor suction-discharge ports and measured. This oil should then be discarded and new oil added to the compressor as described under "Oil Charge" before compressor is again placed in operation on vehicle.

Some service operations can be performed without disturbing the internal mechanism or completely removing the compressor from vehicle. Among them are replacement of the clutch drive plate and hub assembly, clutch rotor and bearing assembly, clutch coil and pulley rim, where "on vehicle" space permits will not require discharging the system. The system must be discharged, evacuated and charged to replace the compressor shaft seal, pressure relief valve and superheat switch whether the compressor is removed from vehicle or not. See Evacuation and Charging Procedure. The service operations shown in the following step procedure are based on bench overhaul with compressor removed from vehicle.

For those operations possible to be performed with compressor "on the vehicle", the procedure is essentially the same. The procedures are basically in order of the normal sequence of removal for the accessibility of the components.

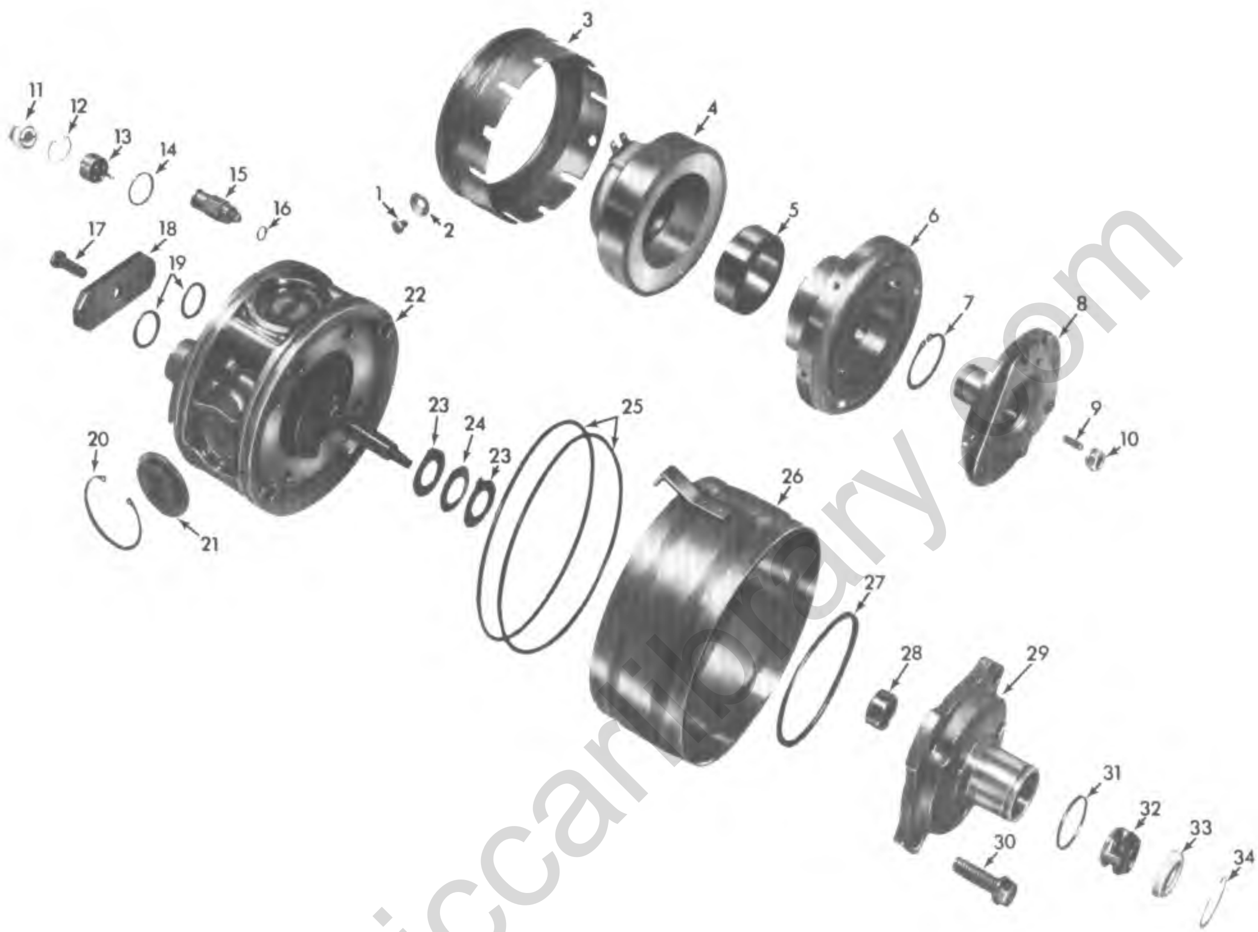
When necessary to adjust the compressor belt tension, DO NOT pry on the compressor shell, lift at square hole on the compressor mounting bracket.

It is recommended that compressor holding fixture J-25008-1 (Fig. 2) be used for all "workbench" procedures to keep the compressor assembly off the workbench and help prevent any possible dirt contamination of parts. The compressor holding fixture may be clamped in a vise with shaft end of compressor in a vertical, horizontal or down position for service, depending on service to be performed.

COMPRESSOR CLUTCH PLATE AND HUB ASSEMBLY

Removal

1. Attach compressor to holding fixture, J-25008-1 (Fig. 2) and clamp fixture in a vise.
2. Keeping clutch hub from turning with clutch hub holding tool J-25030, remove and discard shaft nut using Thin Wall Socket J-9399 (Fig. 3).
3. Thread clutch plate and hub assembly remover J-9401 into hub. Hold body of tool with a wrench and turn center screw into J-9401 remover to remove clutch plate and hub assembly (Fig. 4).



1. Screw
2. Locking Washer
3. Pulley Rim
4. Coil and Housing Assy.
5. Rotor Bearing
6. Rotor and Bearing Assy.
7. Retaining Ring
8. Clutch Drive Assy.
9. Clutch Hub Key
10. Shaft Nut
11. Cap
12. Retaining Ring
13. Superheat Switch
14. O-Ring
15. Pressure Relief Valve
16. O-Ring
17. Screw
18. Shipping Plate
19. O-Ring
20. Retaining Ring
21. Valve Plate Assy.
22. Cylinder and Shaft Assy.
23. Thrust Washer
24. Belleville Washer
25. O-Ring
26. Shell Assy.
27. Ring Seal
28. Main Bearing
29. Front Head Assy.
30. Screw and Washer Assy.
31. O-Ring
32. Shaft Seal
33. Seal Seat
34. Retaining Ring

Fig. 1—Radial Four Cylinder Compressor - Exploded View

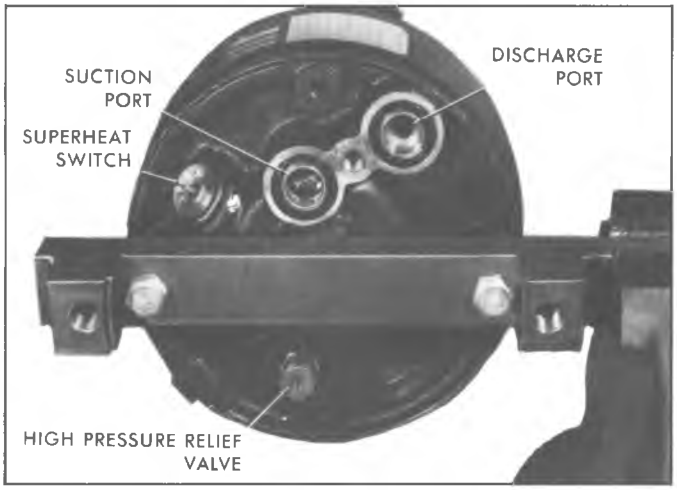


Fig. 2—Installing Holding Fixture

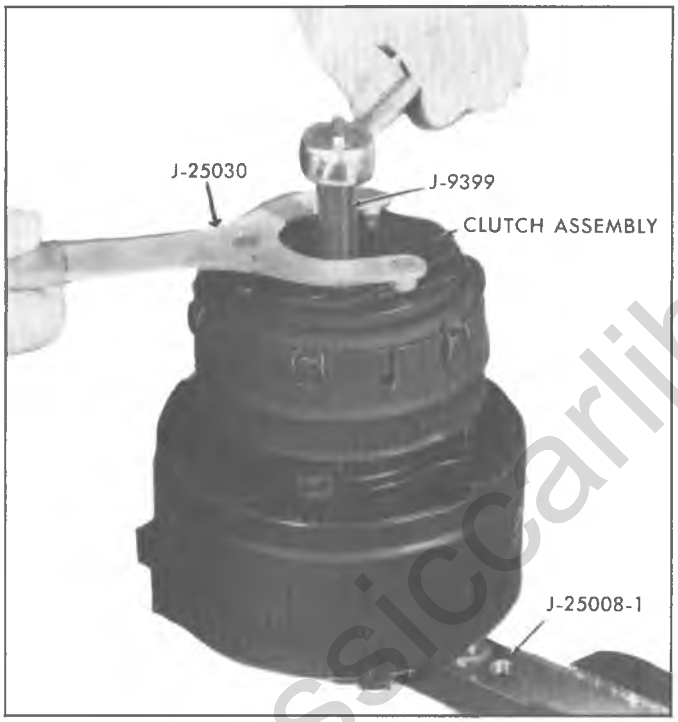


Fig. 3—Removing Shaft Locknut

4. Remove the shaft key.

Installation

1. Install shaft key into hub key groove (Fig. 5). Allow key to project approximately 3/16" out of keyway. Shaft key is curved slightly to provide an interference fit in shaft key groove, to permit key projection without falling out.
2. Be sure frictional surface of clutch plate and clutch rotor are clean before installing clutch plate and hub assembly.
3. Align shaft key with shaft keyway and assemble clutch plate and hub assembly on compressor shaft.

CAUTION: *To avoid internal damage to compressor, do not drive or pound on clutch hub or shaft.*

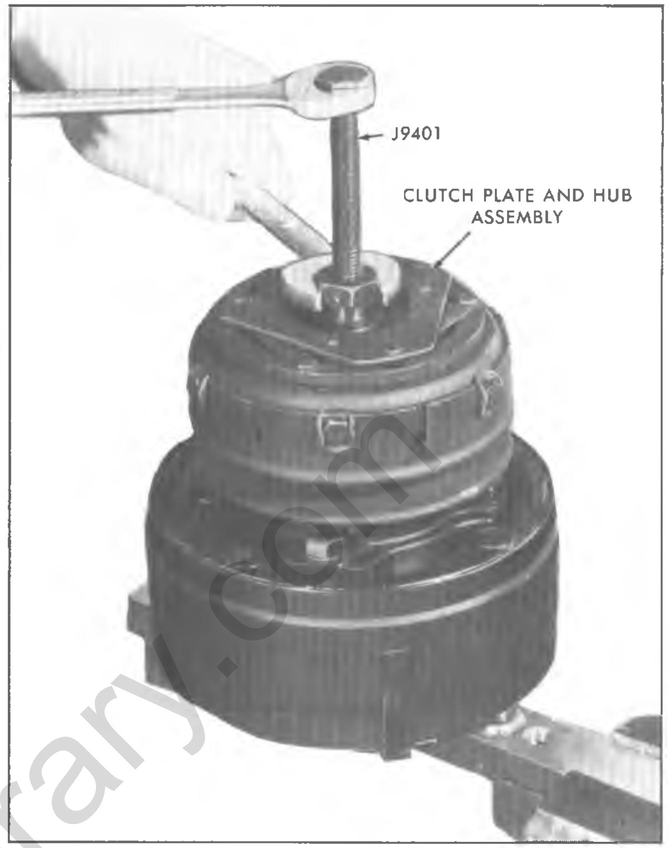


Fig. 4—Removing Clutch Plate and Hub Assembly

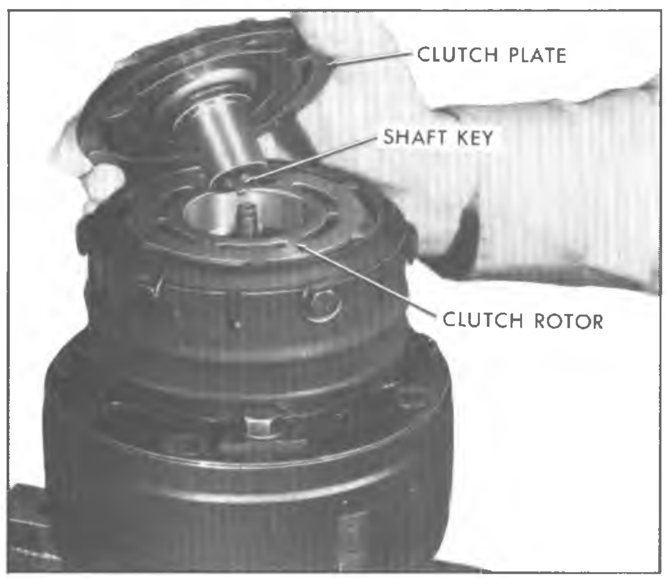


Fig. 5—Installing Shaft Key

4. Place spacer bearing J-9480-2 on hub and insert end of clutch plate and hub assembly installer J-9480-1 through spacer J-9480-2 and thread tool onto end of compressor shaft (Fig. 6).
5. Hold hex portion of tool body with a wrench and

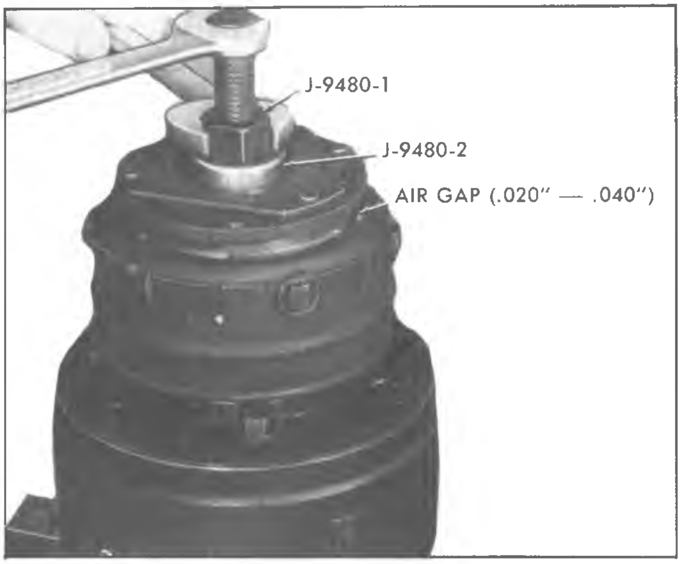


Fig. 6—Installing Clutch Plate and Hub Assembly

tighten center screw to press hub onto shaft until there is a .020 to .040 inch air gap between the frictional surfaces of clutch plate and clutch rotor (Fig. 6).

6. Install a new shaft nut with the small diameter boss of nut against crankshaft shoulder, using special thin wall socket J-9399. Hold clutch plate and hub assembly with clutch hub holding tool J-25030 and tighten to 8-12 foot pounds torque.

COMPRESSOR SHAFT SEAL ASSEMBLY

Removal

When replacing shaft seal assembly, it will be necessary to discharge the refrigerant from the system before replacing shaft seal assembly or removing compressor from vehicle.

1. Discharge the system and remove clutch plate and hub assembly as described under "Compressor Clutch Plate and Hub Assembly".
2. Remove shaft seal seat retainer ring using snap ring pliers J-5403.
3. Throroughly clean the inside of compressor neck area surrounding compressor shaft, seal seat and shaft, to remove all dirt and foreign material before removing seal seat.
4. Insert seal seat remover and install tool J-23128 (Fig. 7) over the shaft into the recessed area of seal seat and tighten tool clockwise to securely engage knurled tangs of tool with the seal seat. Remove seal seat with a twisting and pull motion. Discard seat.
5. Insert seal remover and installer J-9392 (Fig. 8) over shaft and engage shaft seal by pressing downward on tool to overcome shaft seal spring pressure and turn tool clockwise to engage seal assembly tabs with tangs of tool. Remove seal

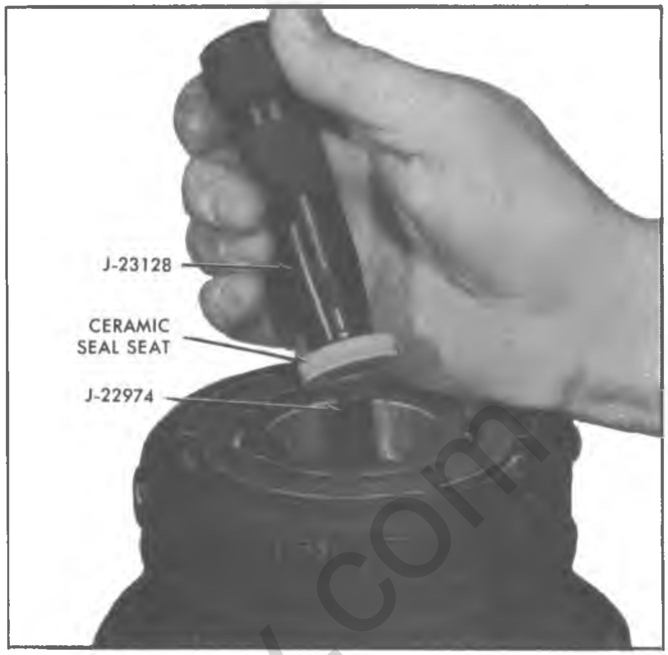


Fig. 7—Removing Seal Seat

assembly by pulling straight out from compressor shaft. Discard seal.

6. Remove seal seat "O" ring from compressor neck using tool J-9553. Discard "O" ring.

Installation

Inspect the inside of compressor neck and shaft area for any lint, dirt or foreign material and be sure these areas are perfectly clean before installing new seal parts. Be sure seal remover and installer J-9392, seal protector

Fig. 8—Removing Shaft Seal

J-22974 and "O" ring installer J-21508 are clean internally and externally. The seal seat "O" ring, shaft seal and seal seat should be dipped in clean 525 Viscosity oil and not handled any more than is absolutely necessary by hand, particularly the mating surfaces. Any dirt or lint on sealing surfaces could cause a seal leak or seal damage.

1. Dip new seal seat "O" ring in clean 525 Viscosity oil and assemble onto "O" ring installer J-21508 (Fig. 9).
2. Insert "O" ring installer J-21508 into the compressor neck until the tool "bottoms". Lower the movable slide of "O" ring installer to release "O" ring into seal seat "O" ring groove. Rotate installer tool to seat "O" ring and remove tool. Inspect the internal neck area for cleanliness and proper "O" ring positioning.
3. Dip new shaft seal "O" ring and seal face in clean 525 Viscosity oil and carefully engage shaft seal assembly with locking tangs of seal remover and installer J-9392 (Fig. 8).
4. Install shaft seal protector J-22974 over the end of compressor shaft and slide shaft seal onto compressor shaft. Slowly turn the tool clockwise while applying light pressure until seal engages the flats of compressor shaft and can be seated into place. Rotate tool J-9392 counterclockwise to disengage from seal tabs and remove tool.
5. Attach ceramic seal seat to the seal seat remover and installer J-23128 and dip ceramic seat in clean 525 viscosity oil to coat seal face and outer surface. Carefully install seat over compressor shaft and seal protector J-22974 and push seat into place with a rotary motion. Remove tools J-23128 and J-22974.
6. Install new seal seat retainer ring with snap ring pliers J-5403.
7. Leak test compressor as described under "Leak Testing the Compressor" and correct any leaks found.
8. Reinstall clutch plate and hub assembly as described under "Compressor Clutch Plate and Hub Assembly".

COMPRESSOR CLUTCH ROTOR AND BEARING ASSEMBLY, CLUTCH COIL AND PULLEY RIM

Compressor Clutch Rotor and Bearing Assembly Removal

1. Remove the clutch plate and hub assembly as described under "Compressor Clutch Plate and Hub Assembly".
2. Remove rotor and bearing assembly retaining ring using snap ring pliers J-6083 (Fig. 10). Mark the location of clutch coil terminals. If clutch rotor and/or rotor bearing only are to be replaced, bend the lockwashers away from pulley rim mounting screws (Fig. 11) and remove the six mounting screws and special lockwashers before proceeding with Step 3. Discard special lockwashers.
3. Install rotor and bearing puller guide J-25031 over the end of compressor shaft and seat on the front head of compressor (Fig. 11).
4. Install rotor and bearing puller J-25031 down into rotor until the puller arms engage the recessed edge of rotor hub. Hold puller and arms in place and

Fig. 9—Installing Seal Seat "O" Ring

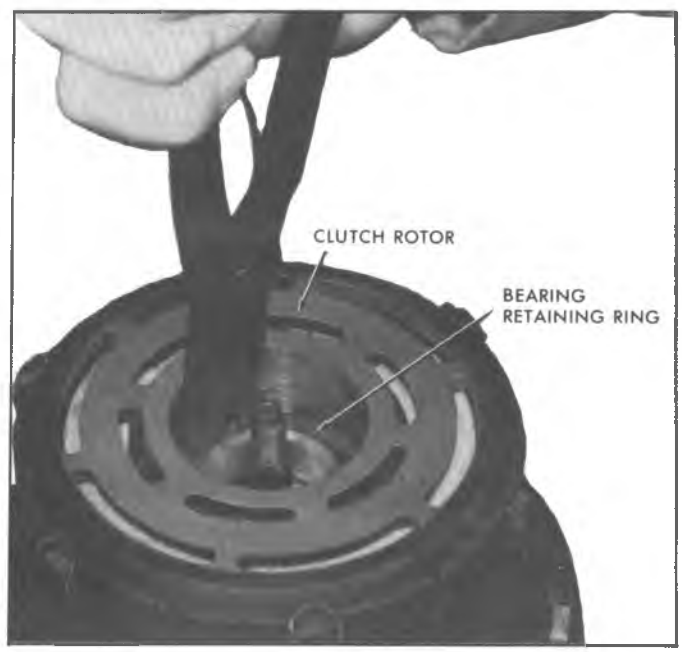


Fig. 10—Removing Bearing Retaining Ring

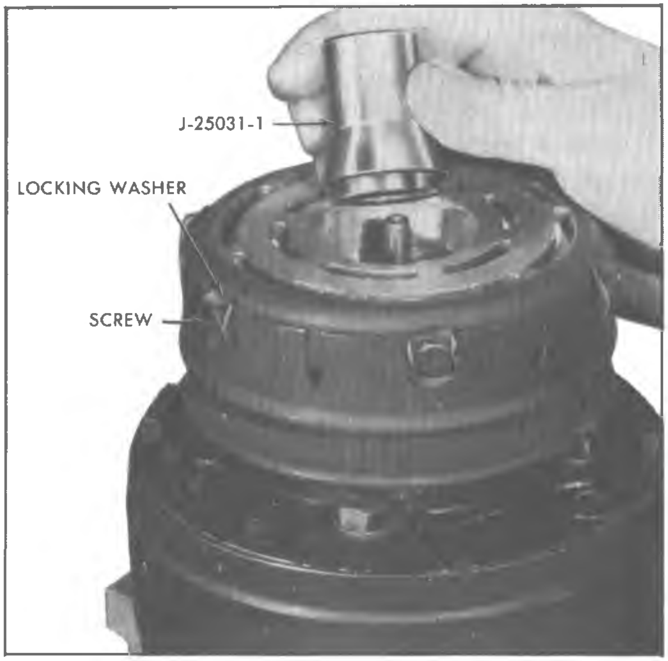


Fig. 11—Installing Rotor and Bearing Puller Guide

tighten puller screw against puller guide to remove clutch rotor and assembly parts (Fig. 12). If pulley rim mounting screws and washers were removed in Step 2, only clutch rotor and bearing assembly will be removed for replacement.

The clutch coil and housing assembly is pressed onto front head of compressor with an interference fit and will not be removed unless pulley rim mounting screws are left securely in place and pulley rim pulls coil and housing assembly off with total clutch rotor and pulley rim assembly (Fig. 13).

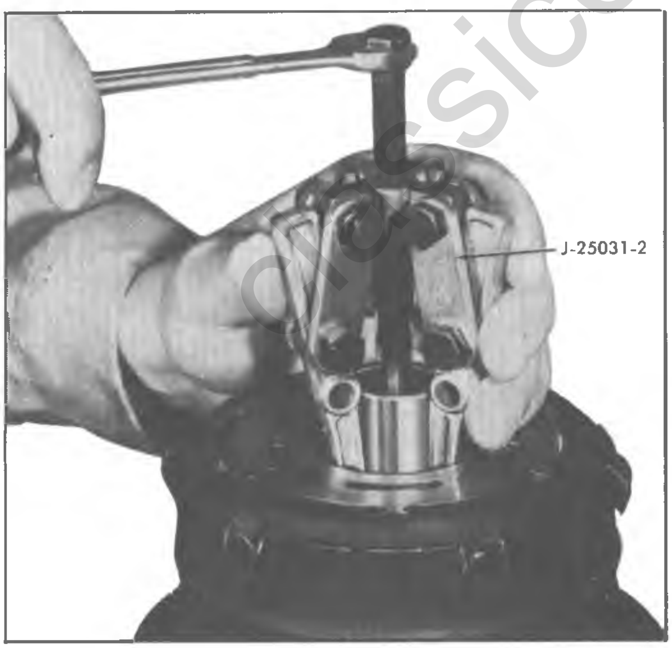


Fig. 12—Installing Rotor and Bearing Puller

Fig. 13—Clutch Coil and Housing Assembly

Clutch Rotor Bearing Replacement

Removal

1. Perform "Compressor Clutch Rotor and Bearing Assembly Removal" and remove the pulley rim mounting screws as described in Step 2.
2. Place rotor and bearing assembly on blocks (Fig. 15) and drive bearing out of rotor hub with rotor bearing remover and rotor assembly installer J-25029. It will not be necessary to remove the staking at the rear of the rotor hub to remove the bearing. See Figure 14.

Installation

1. Place rotor and hub assembly face down on a clean, flat and firm surface (Fig. 16).
2. Align new bearing squarely with hub bore and using pulley and bearing installer J-9481 with Universal Handle J-8092, drive bearing fully into hub. The tool will apply force to outer race of bearing.
3. Stake bearing in place with a 45° angle punch (Fig. 14) but do not stake too deep (.045 - .055 inch) and possibly distort the outer race of bearing. Use new stake locations 120° apart. Do not use old stake locations.
4. Reassemble rotor and bearing assembly to front head of compressor using rotor bearing remover and rotor assembly installer J-25029. With tool J-25029 assembled to the handle as shown in Figure 17, the tool will apply force to the inner race of the bearing when installing the clutch and pulley assembly on the front head of the compressor.
5. Install rotor and bearing assembly retaining ring.

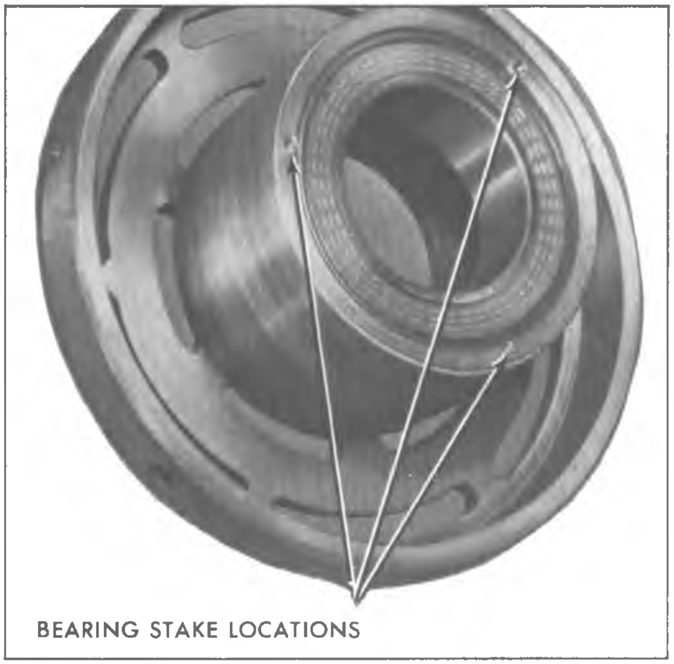


Fig. 14—Bearing Stake Locations

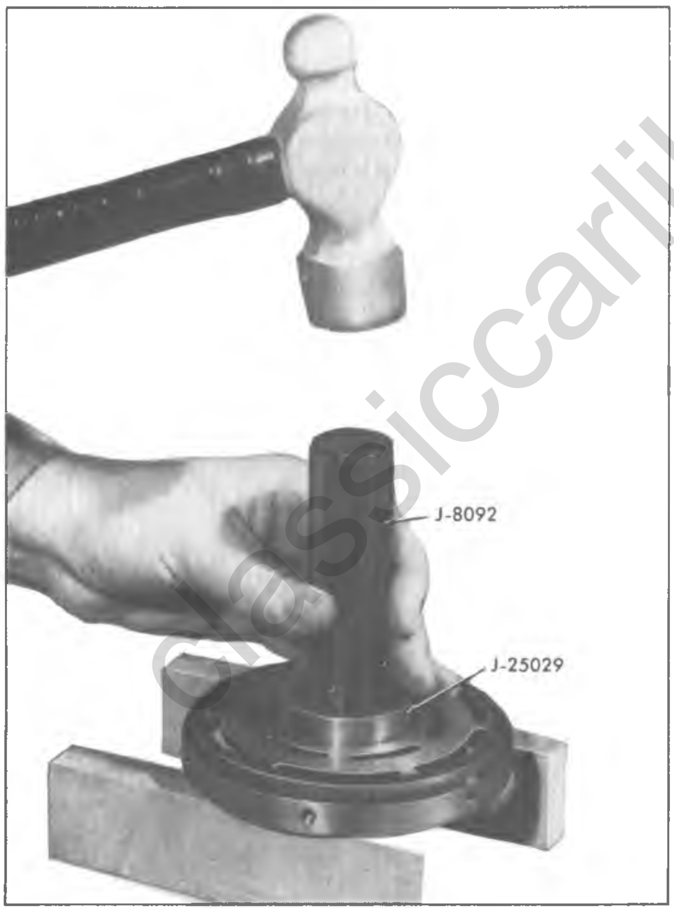


Fig. 15—Removing Clutch Rotor Bearing

6. Assemble and fully seat pulley rim to clutch rotor and bearing assembly as shown in Figure 17, using loctite RC-75 or equivalent on screw threads and use new lockwashers. Do not torque mounting screws to final torque limits until pulley rim is checked to be rotating "in line".

Fig. 16—Installing Clutch Rotor Bearing

7. Tighten pulley rim mounting screws to a 50-70 inch pounds torque and lock screw heads in place as shown in Figure 17.
8. Assemble clutch plate and hub assembly as described under "Compressor Clutch Plate and Hub Assembly".

Clutch Coil and Pulley Rim Replacement

Removal

1. Perform "Compressor Clutch Rotor and Bearing Assembly Removal" but do not loosen or remove pulley rim mounting screws until clutch rotor, coil and pulley rim assembly have been removed from front head in Step 4.
2. Remove pulley rim mounting screws and slide pulley rim off rotor and hub assembly. The pulley rim and clutch coil are replaceable at this point.

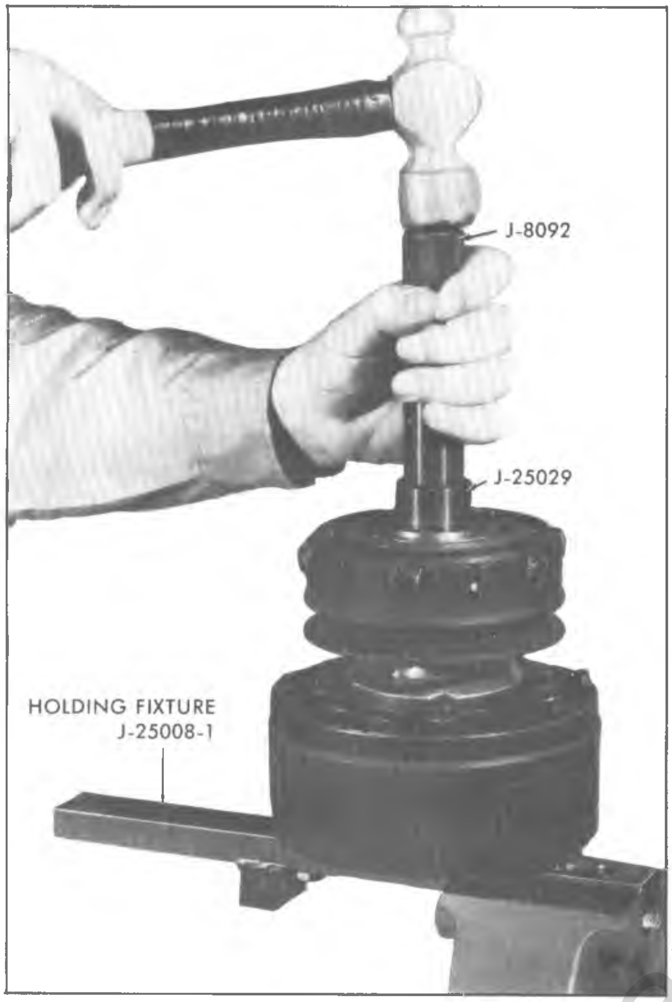


Fig. 17—Installing Rotor and Bearing Assembly

Installation

1. Assemble clutch coil, pulley rim and clutch rotor and bearing assembly as shown in Figure 13, using loctite RC-75 or equivalent on screw threads and using new lockwashers, but do not lock screw heads in place.
2. Place assembly on neck of front head and seat into place using rotor bearing remover and rotor assembly installer J-25029 as shown in Figure 17. Before fully seating the assembly on front head, be sure the clutch coil terminals are in the proper location in relation to compressor and that the three protrusions on the rear of the clutch coil align with the locator holes in front head.
3. Install rotor and bearing assembly retaining ring and reassemble clutch plate and hub assembly.
4. Rotate pulley rim and rotor to be sure pulley rim is rotating "in line" and adjust or replace as required. Tighten pulley rim mounting screws to 100 inch pounds torque and lock screw heads in place.

FRONT HEAD AND MAIN BEARING ASSEMBLY

Removal

1. Remove clutch rotor and bearing assembly but do not loosen or remove pulley rim mounting screws and remove clutch rotor, coil and pulley rim assembly as a total assembly.
2. Remove compressor shaft seal.
3. Remove the four front head mounting screws (Fig. 18) and remove front head assembly and discard seal ring. At this point front head and bearing assembly, front head seal ring (Fig. 19) or the Belleville and thrust washers may be replaced.

Installation

1. Check front head and compressor cylinder area for any dirt or lint and install a new thrust washer kit if required.
2. Dip new front head seal ring in 525 Viscosity oil and install seal in seal groove of front head (Fig. 19).
3. Position oil hole in front head to be "up" when assembled to compressor cylinder to correspond with "up" position of compressor. Install front head on compressor shaft. Be sure seal ring stays in place and front head seats correctly to cylinder. Tighten front head mounting screws to 18-22 foot pounds.
4. Install a new compressor shaft seal.
5. Install clutch rotor and bearing assembly, clutch coil and pulley rim assembly to front head (Fig. 17). Before fully seating the assembly on front head be sure clutch coil terminals are in the proper location

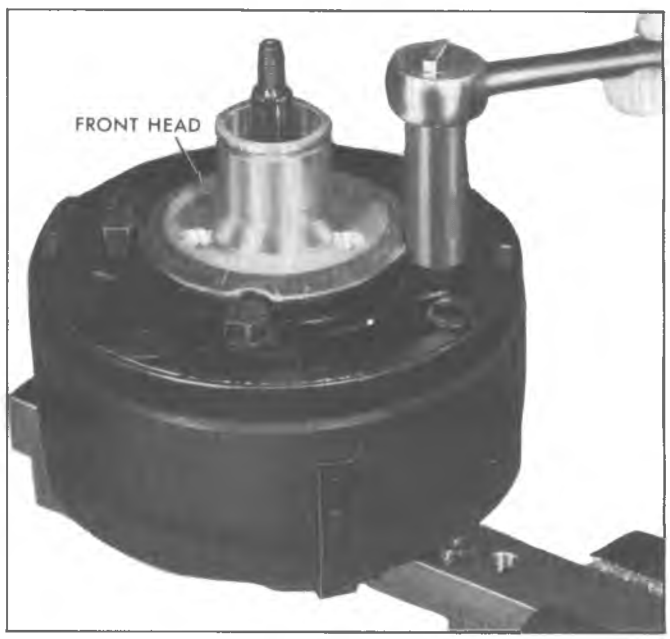


Fig. 18—Remove Front Head Assembly

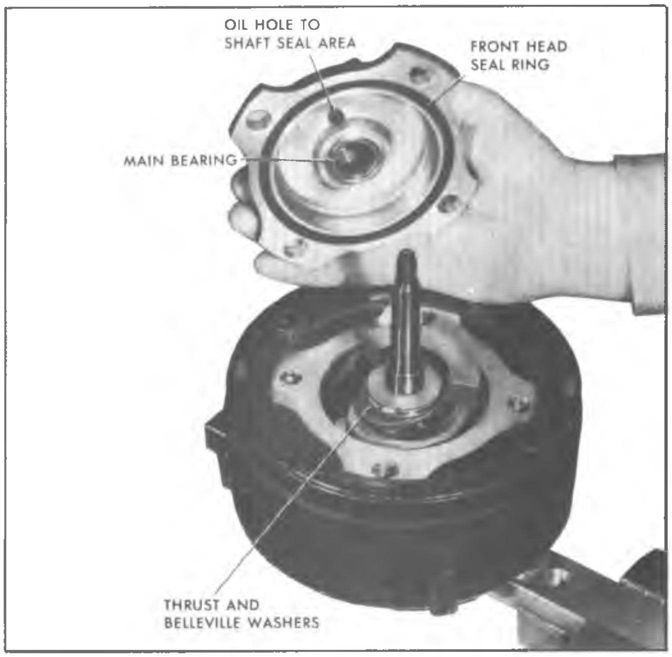


Fig. 19—Installing Front Head

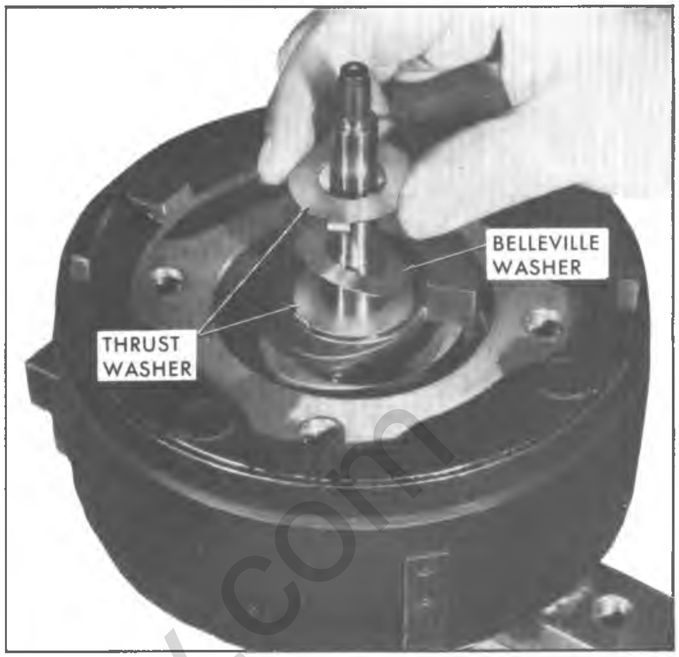


Fig. 20—Replacing Thrust and Belleville Washers

in relation to compressor and that the three protrusions on rear of clutch coil align with the locator holes in front head.

6. Install rotor and bearing assembly retaining ring and reassemble clutch plate and hub assembly.
7. Leak test compressor as described under "Leak Testing the Compressor" and correct any leaks found.

THRUST AND BELLEVILLE WASHER REPLACEMENT

1. Remove two thrust and one belleville washer from compressor shaft. Note the assembled position of the washers.
2. Install a new thrust washer on compressor shaft with thrust washer tang pointing up (Fig. 20).
3. Install the new belleville washer on shaft with the high center of the washer up (Fig. 20).
4. Install the remaining thrust washer on shaft with the tang pointing down (Fig. 20).
5. Lubricate the three washers with clean oil (525 Viscosity) and assemble front head to cylinder.

MAIN BEARING REPLACEMENT

Removal

1. Remove front head assembly.
2. Place front head assembly on two blocks (Fig. 21) and using main bearing remover J-24896 drive bearing out of front head.

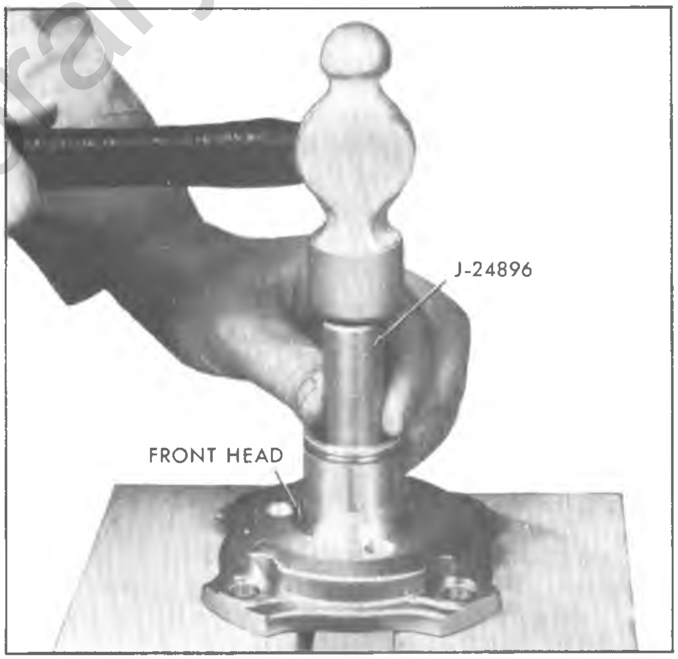


Fig. 21—Removing Main Bearing

Installation

1. Place front head with neck end down on a flat, solid surface.
2. Align new bearing and bearing installer J-24895 squarely with bearing bore of front head and drive bearing into front head (Fig. 22). The tool J-24895 must seat against front head to insert bearing to proper clearance depth.
3. Assemble front head to cylinder and complete the assembly.

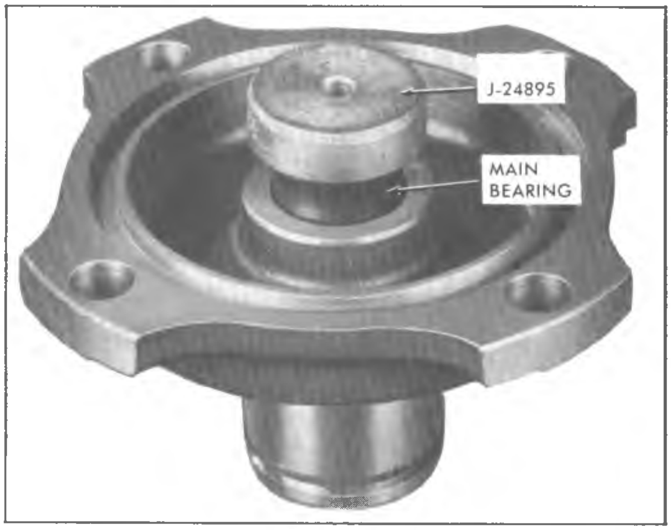


Fig. 22—Installing Main Bearing

COMPRESSOR SHELL, SHELL TO CYLINDER 'O' RING AND VALVE PLATE REPLACEMENT

The clutch plate and hub assembly, the clutch rotor and bearing assembly, the clutch coil and pulley rim must be removed before compressor shell can be removed or replaced. The location of clutch coil terminals should be marked for reference on reassembly. Allow compressor to cool to room temperature before attempting to remove compressor shell as greater force will be required to remove the compressor shell when hot due to metal expansion difference between the aluminum cylinder and steel compressor shell.

1. Pry shell retaining strap away from cylinder and position the strap high enough to clear cylinder as shell is removed (Fig. 23).
2. Remove compressor holding fixture J-25008-1 and reverse holding fixture step block protrusions engaging compressor shell. Install medium length bolts through holding fixture and thread them into compressor cylinder until the step of the fixture protrusions contact compressor shell, finger tight, both sides (Fig. 24). Check to be sure the step protrusions do not overlap the cylinder but will pass both sides.
3. Using a wrench, alternately tighten each bolt approximately 1/4 turn to push shell free of "O" rings on cylinder.

   If one screw appears to require more force to turn than the other, immediately turn the other screw to bring the screw threading sequence in step or the shell will be cocked and made more difficult to remove. Normal removal does not require much force on wrench if the screws are kept in step while turning. The shell can be removed by hand as soon as shell is free of shell to cylinder "O" rings. Do not turn screws any further than necessary to release shell.

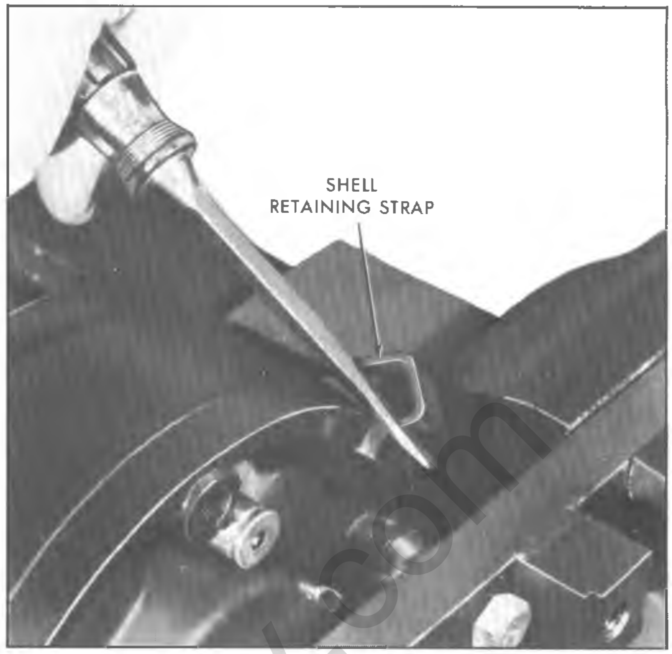


Fig. 23—Releasing Retaining Strap

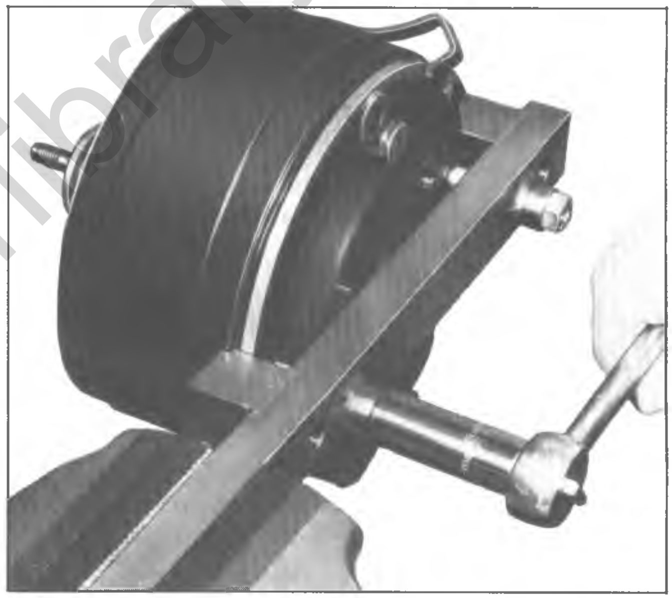


Fig. 24—Removing Shell Assembly

4. Remove compressor shell, remove holding fixture J-25008-1 from compressor, reverse fixture to again hold compressor by the opposite side using the short length screws.

   At this point the valve plate retainer ring may be removed using internal snap ring pliers, J-4245 (Fig. 25) and remove the compressor valve plate (Fig. 26) for replacement or piston inspection.

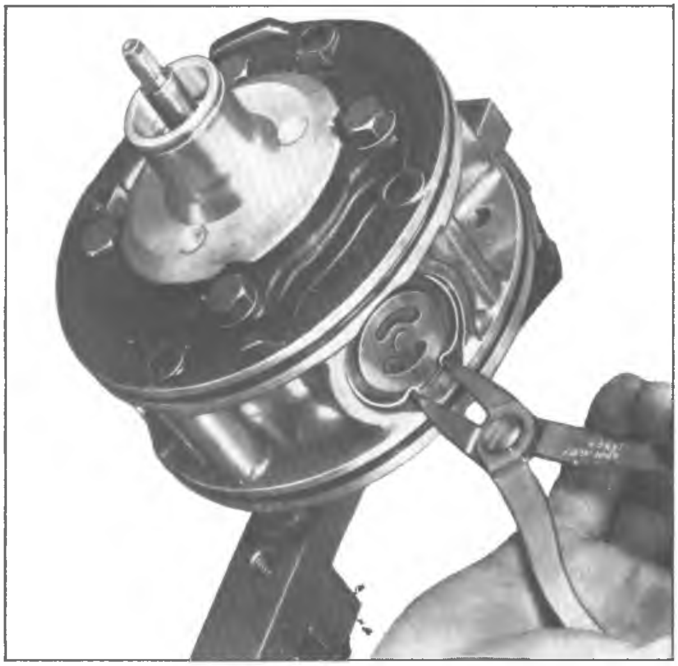


Fig. 25—Removing Valve Plate

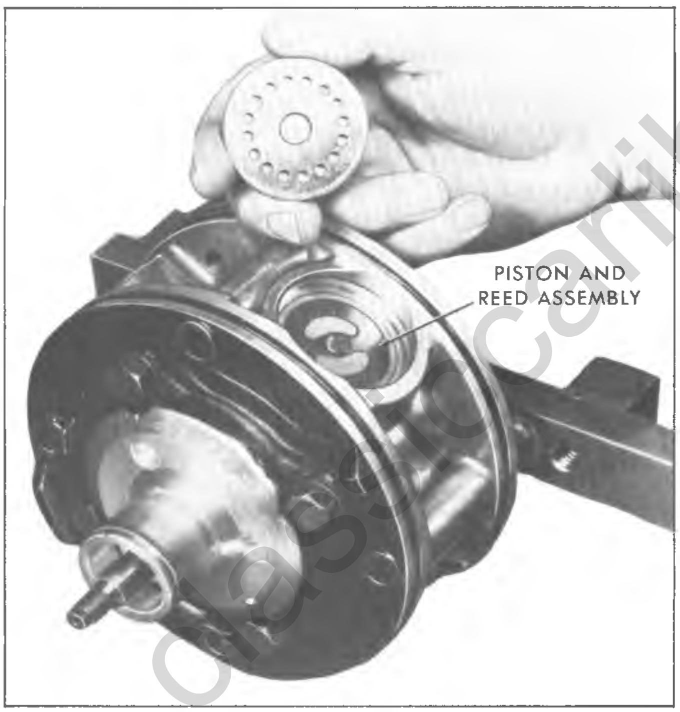


Fig. 26—Inspecting Piston and Reed Assembly

Installation

1. Remove old cylinder to shell "O" rings and discard. Check compressor assembly and interior of compressor shell to be sure they are free of lint or dirt.
2. Dip a cylinder to shell "O" ring in 525 Viscosity oil and install in rear "O" ring groove of cylinder. Be careful in moving "O" ring across cylinder surface to prevent damaging "O" ring.
3. Dip remaining cylinder to shell "O" ring in oil and install it in front "O" ring groove of cylinder.
4. Place compressor shell on cylinder and rotate retaining strap to its original location (Fig. 24).
5. Attach shell installing fixture J-25008-2 to the holding fixture J-25008-1, using the long bolts and plate washers of tool set.

   Align the step projections of shell installing fixture J-25008-2 to contact compressor shell evenly both sides.
6. Push compressor shell as close to "O" ring (Fig. 27) as possible by hand and check for equal alignment of shell around cylinder. Tighten fixture screws finger tight.
7. Using a wrench, alternately tighten each bolt approximately 1/4 turn to push compressor shell over "O" rings and back against shell stop flange at the rear of compressor cylinder.

   If one screw appears to require more force to turn than the other, immediately turn the other screw to bring the screw threading sequence in step or the shell will be cocked and made more difficult to install. Normal installation does not require much force on wrench if screws are kept in step while turning.
8. When shell is seated against the stops, bend shell retaining strap down into place by tapping gently with a hammer.
9. Remove shell installing fixture J-25008-2 and leak test compressor.

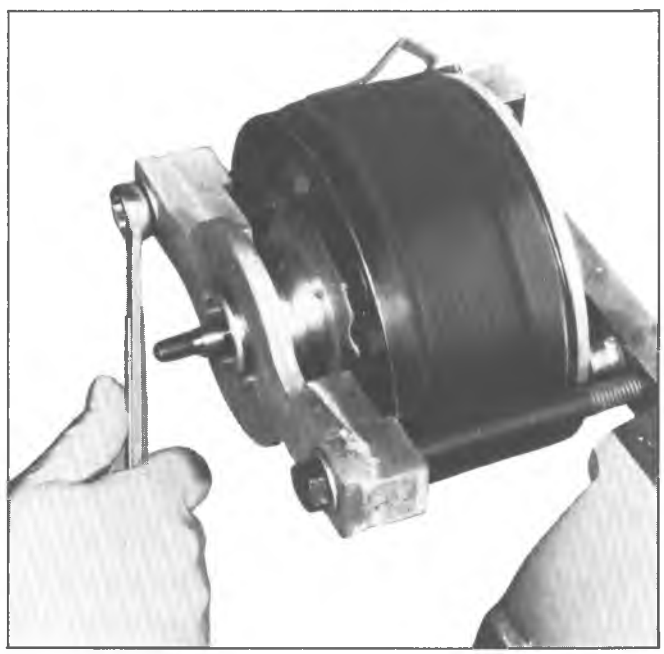


Fig. 27—Installing Shell Assembly

OIL CHARGE

The radial four cylinder compressor is charged with 5.5-6.5 ounces of 525 viscosity oil. During normal operation a certain amount of oil will circulate with the Refrigerant 12 (R-12) in the system.

When necessary to replace a system component it is recommended that oil be added to the system in accordance to the following procedure.

If compressor is operable, idle vehicle for 10 minutes with the A/C controls set for Maximum Cooling and High Blower prior to discharging the system.

Add additional oil in the following amounts for any system component being replaced.

Condenser .... 1 ounce
Evaporator .... 3 ounces
VIR .... 1 ounce
Compressor (See Oil Charge - Compressor Replacement)

Oil Charge-Compressor Replacement

1. Gravity drain oil from a new compressor.

   Position compressor with shaft end "up" and drain compressor suction and discharge ports. The compressor should gravity drain for 10 minutes.

   When necessary to flush system with R-11, drain assembly and blow dry with air prior to the installation of a new compressor. It is not necessary to drain oil from the replacement compressor.

2. The refrigerant 12 (R-12) is to be slowly discharged from the system.
3. Remove original compressor from vehicle, gravity drain the oil from compressor as in Step 1 and determine the amount of oil drained from the original compressor.
4. Add same amount of new 525 viscosity oil to new replacement compressor as was drained from original compressor.

Oil Charge Correction - System Leak Conditions

Component Rupture - Fast Discharge

1. Correct leak and flush the system with R-11.
2. Drain compressor and add 5.5 ounces of 525 viscosity oil to compressor crankcase through the suction port of compressor.
3. Recharge system with R-12, leak check and performance check according to the Evacuation and Charging Procedure.

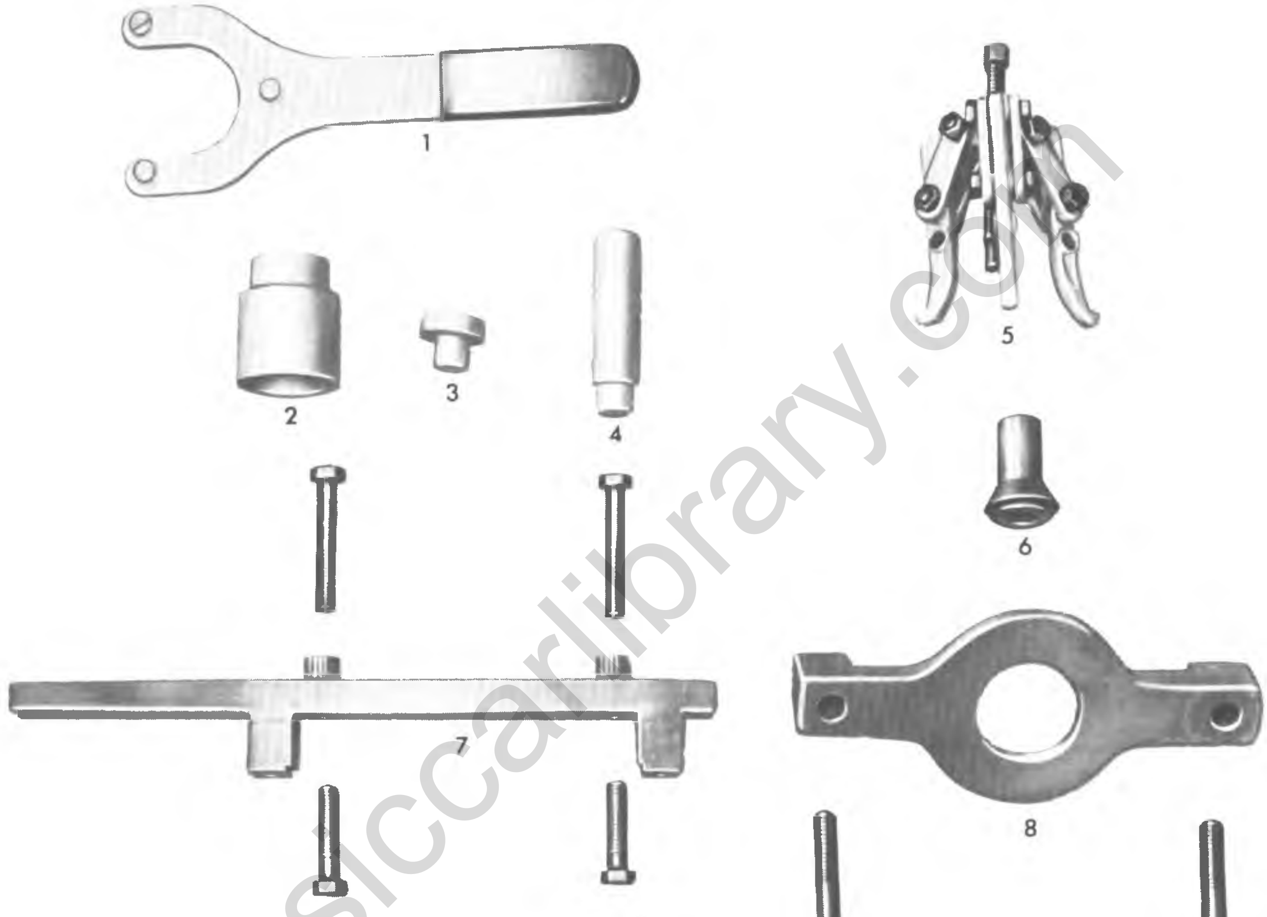
Slow Leak

When loss of refrigerant has occurred over an extended period of time, add 3 ounces of 525 viscosity oil to the system. Recharge or evacuate and recharge as required according to procedure.

System Performance Evaluation

When system performance, efficiency and proper oil charge is in doubt and must be evaluated accurately, it is recommended that the system be flushed with R-11 and the exact oil charge (5.5-6.5 ounces) of 525 viscosity oil be added to the compressor prior to any further checks of the system.

SPECIAL TOOLS



1. J-25030 Clutch Hub Holding Tool
2. J-25029 Rotor Bearing Remover and Rotor Assy. Installer
3. J-24895 Main Bearing Installer
4. J-24896 Main Bearing Remover

5. J-25031-2 Rotor and Bearing Puller
6. J-25031-1 Rotor and Bearing Puller Guide
7. J-25008-1 Compressor Holding Fixture
8. J-25008-2 Shell Installing Fixture

Fig. 28—Special Tools

SECTION 4

REAR AXLE DIFFERENTIAL

OVERHAUL

GENERAL INFORMATION

Except for one modification (in the Dana 10-1/2" Axle), all overhaul procedures found in section 4 of the 1974 Overhaul Manual are applicable to 1975 differentials.

Note the 8-1/2" axles on G10 models in figure 1. Procedures for these units are listed under "Passenger Car 8-1/2" Ring Gear" in the 1974 Overhaul manual. The 6200# Dana differential is overhauled in an identical manner to the 7500# Dana.

DANA 10-1/2 RING GEAR DIFFERENTIAL

The differential shown on page 4-55 of the 1974 Overhaul Manual has been modified for 1975.

1. The differential case (item 14 on page 4-55) is now a one-piece design.
2. The pinion spider (item 21) is now a pinion shaft, using two pinion gears rather than four.

Axle Line-Up

The chart below shows the rear axle application for each vehicle series.

MODEL	SOURCE	TYPE/CAPACITY	RING GEAR SIZE
C10	Chevrolet	Salisbury/3750#	8-7/8"
K10	Chevrolet	Salisbury/3750#	8-7/8"
P10	Chevrolet	Salisbury/3500#	8-7/8"
G10	Chevrolet	Salisbury/3100#	8-7/8"
G10	Chevrolet	Salisbury/3100#	8-1/2"
C20 (Except Crew Cab)	Chevrolet	Salisbury/5700#	10-1/2"
C20 (Crew Cab)	Chevrolet	Salisbury/7500#	10-1/2"
K20	Chevrolet	Salisbury/5700#	10-1/2"
P20	Chevrolet	Salisbury/5700#	10-1/2"
G20	Chevrolet	Salisbury/3500#	8-7/8"
C30 (Except Dual Wheel Camper)	Chevrolet	Salisbury/7500#	10-1/2"
C30 (Dual Wheel Camper)	Dana	Salisbury/7500#	10-1/2"
P30	Chevrolet	Salisbury/7500#	10-1/2"
P30 (With H22/H23)	Chevrolet	Banjo/11,000#	12-1/4"
G30	Chevrolet	Salisbury/7500#	10-1/2"
G30 (Dual Wheel)	Dana	Salisbury/6200#	9-3/4"
G30 (Dual Wheel)	Dana	Salisbury/7500#	10 1/2"

Fig. 1—Axle Chart

SECTION 5

BRAKES

The 1975 brake boosters are essentially the same as those described in the 1974 Overhaul Manual, with the following exceptions:

DELCO SINGLE DIAPHRAGM BOOSTER

POWER PISTON GROUP ASSEMBLY

The assembly procedure is the same as outlined in the 1974 Overhaul Manual; however, when assembling the support plate to the power piston be sure to press down and rotate the support plate clockwise until the locking lugs of the power piston come against the stops on the support plate.

GAUGING

All 1975 master cylinders incorporate shallow socket primary pistons; therefore, all gauging procedures should incorporate the use of Gauge J-22647.

DELCO SINGLE AND DUAL DIAPHRAGM BOOSTERS

STAKING FRONT AND REAR CYLINDER HOUSINGS

Delco single and dual diaphragm booster cylinder housings are staked in two places 180° apart (fig. 1). When reassembling cylinder housings, be sure the housings are fully locked. Using a 1/8″ diameter rod (or equivalent tool), stake the two housings in two places 180° apart.

CAUTION: *The interlock tabs* **should not** be used for staking a second time; stake two of the remaining tabs. When all tabs have been staked once, the housing **must** be replaced.

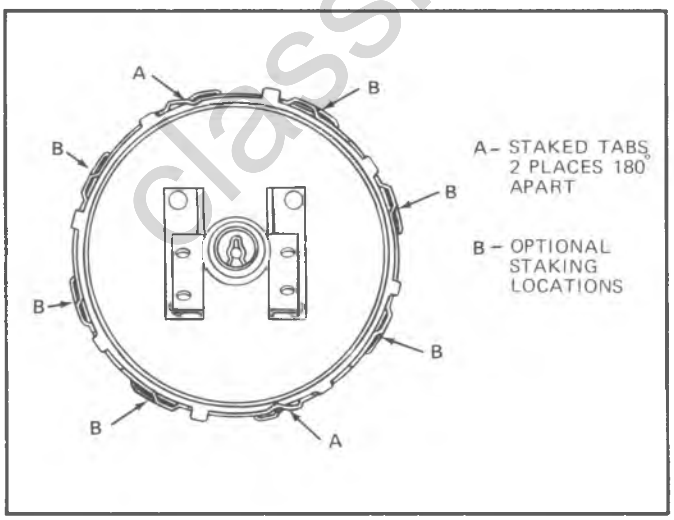


Fig. 1--Delco Booster With Staked Tabs

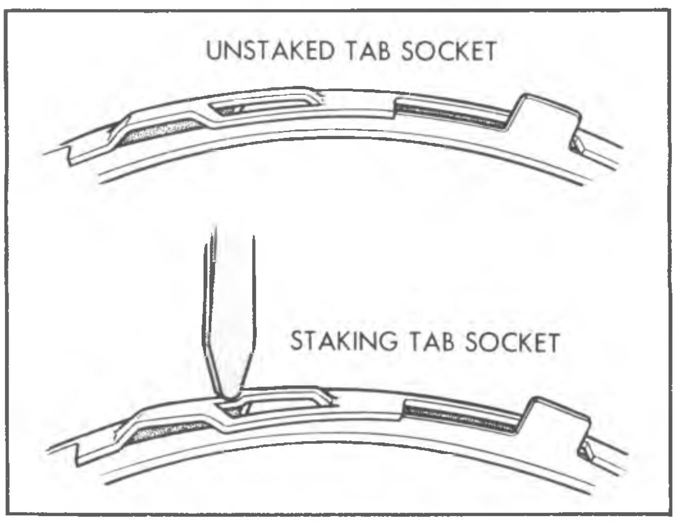


Fig. 2--Staking Booster Tabs

BENDIX

HYDRAULIC BRAKE BOOSTER (HYDRO-BOOST)

INDEX

OVERHAUL OPERATIONS

The Bendix Hydraulic Brake Booster utilizes the hydraulic pressure supplied by the power steering pump to provide power assist for brake applications (figs. 3 and 4). The dual master cylinder is mounted to the output push rod end of the booster.

The procedures below include removal of the mounting bracket even though it is not necessary to remove the bracket for overhaul of the internal assembly.

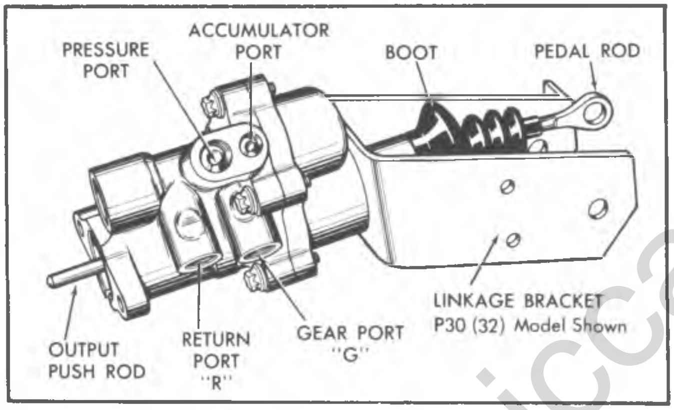


Fig. 3--Bendix Hydro-Boost Brake Booster (G—P Models)

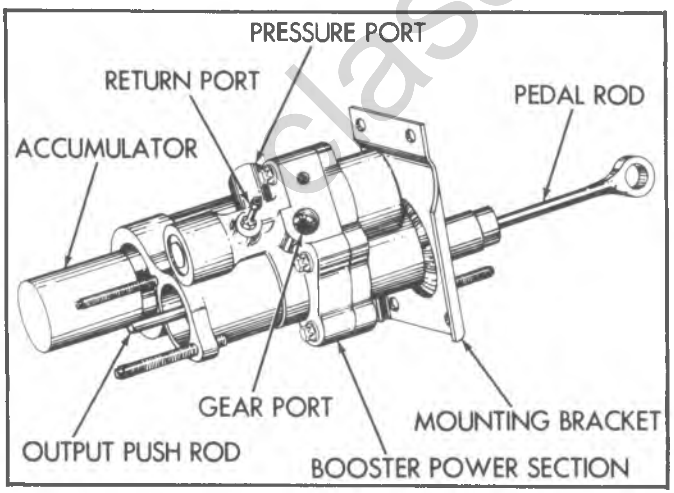
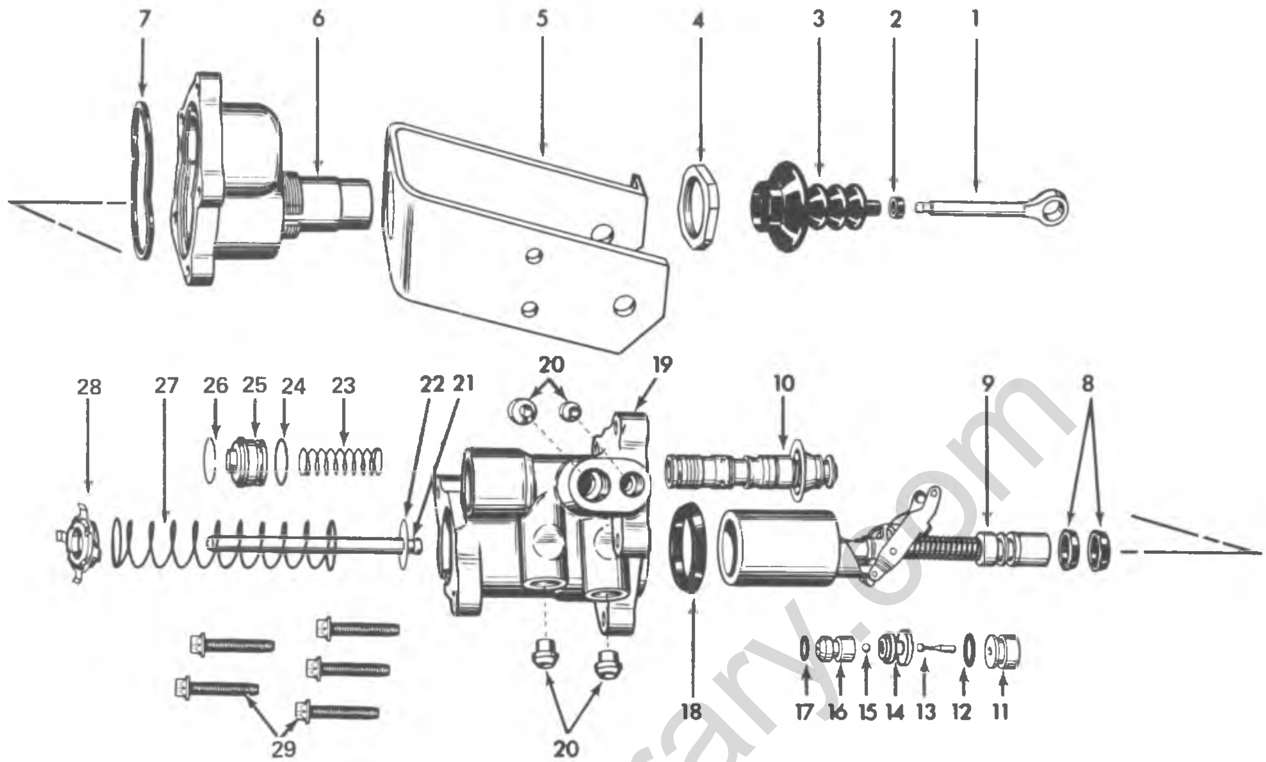


Fig. 4--Bendix Hydraulic Brake Booster (C Models)

Disassembly (Fig. 5)

1. Secure the booster in a vise (bracket end up) and use a hammer and chisel to cut the bracket nut that secures the mounting bracket to the power section (cut the nut at the open slot in the threaded portion of the housing). Be careful to avoid damage to the threads on the booster hub. Spread the nut and remove it from the power section. Then remove the mounting bracket.
2. Remove the pedal rod boot (if equipped) by pulling it off over the pedal rod eyelet.
3. Place Tool J-24569 around the pedal rod and resting on the input rod end as shown in Figure 6.
4. Place a punch (or similar tool) through the pedal rod from the lower side of Tool J-24569. Push the punch on through to rest on the higher side of the tool. Lift up on the punch to shear the pedal rod retainer; remove the pedal rod.
5. Remove the remnants of the rubber grommet from the groove near the end of the pedal rod and from the groove inside the input rod end.
6. With a small screwdriver, pry the plastic guide out of the output push rod retainer. Disengage the tabs of the spring retainer from the ledge inside the opening near the master cylinder mounting flange of the booster. Remove the retainer and the piston return spring from the opening.
7. Pull straight out on the output push rod to remove the push rod and push rod retainer from inside the booster piston.
8. Press in on spool plug, and insert a small punch into the hole on top of the housing (fig. 7). This unseats one side of the spool plug snap ring from its groove in the bore. Then remove the snap ring from the bore.



1. Pedal Push Rod
2. Pedal Rod Retainer
3. Boot
4. Bracket Nut
5. Linkage Bracket
6. Booster Cover
7. Cover to Housing Seal
8. Input Rod Seals
9. Input Rod and Piston Assy.
10. Spool Assembly
11. Plunger Seat
12. "O" Ring Seal
13. Plunger
14. Spacer
15. Check Valve Ball
16. Accumulator Check Valve
17. "O" Ring Seal
18. Piston Seal
19. Booster Housing
20. Tube Seat Inserts
21. Output Push Rod
22. Push Rod Retainer
23. Spool Spring
24. Plug "O" Ring
25. Spool Plug
26. Snap Ring
27. Piston Return Spring
28. Spring Retainer
29. Housing to Cover Bolts

Fig. 5--Power Booster Components (Typical)

9. Use pliers to remove the spool plug from the bore. Remove the "O" ring seal from the plug; discard the "O" ring. Remove the spool spring from the bore.

10. Place the booster cover in a vise equipped with soft jawed devices. Using special socket J-25085, remove the five screws that secure the booster housing to the cover.

11. Remove the booster assembly from the vise and while holding the unit over a pan, separate the cover from the housing. Remove the large seal ring from the groove in the cover; discard the seal.

12. Remove the input rod and piston assembly, and the spool assembly from the booster housing.

13. Remove the input rod seals from the input rod end, and the piston seal from the piston bore in the housing; discard the seals.

14. Remove the plunger, seat, spacer and ball from the accumulator valve bore in the flange of the booster housing. Remove the "O" ring from the seat; discard the "O" ring.

15. Thread a screw extractor into the opening in the check valve in the bottom of the accumulator valve bore, and remove the check valve from the bottom of the bore. Discard the check valve and "O" ring.

    NOTE: Using a screw extractor damages the seat in the check valve. A new charging valve kit must be installed whenever the check valve is removed from the accumulator valve bore.

16. Use a 1/4" or a 5/16" spiral flute type screw extractor to remove the tube seats from the booster ports.

Cleaning and Inspection

1. Clean all metal parts in a suitable solvent. Be careful to avoid losing small parts.

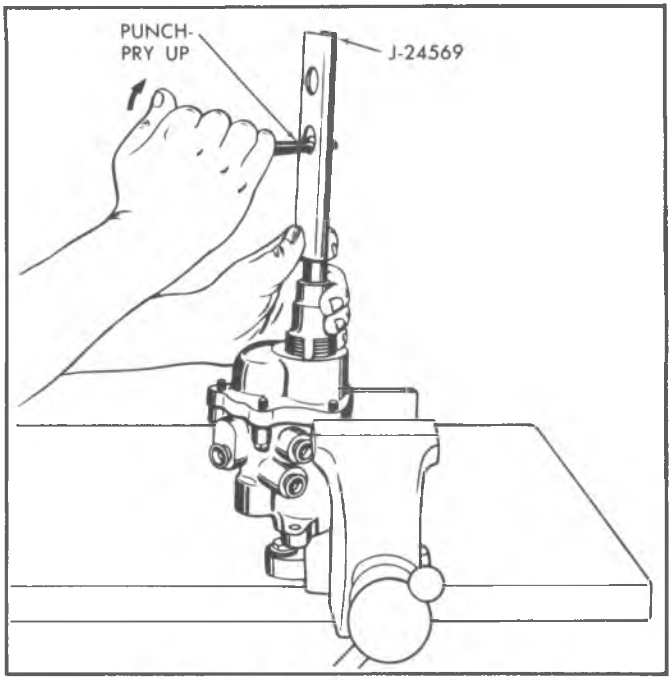


Fig. 6--Removing Booster Pedal Rod (Typical)

2. Inspect the valve spool and the valve spool bore in the booster housing for corrosion, nicks, scoring or other damage. Discoloration of the spool or bore, particularly in the grooves, is not harmful and is no cause for concern.
3. If the valve spool or the valve spool bore has nicks or scoring that can be felt with a fingernail, particularly on the lands, the entire booster should be replaced as an assembly.

   NOTE: The clearance between the valve spool and the spool bore of the housing assembly is important. Because of this, the valve spool and the housing assembly make up a selective assembly (the valve spool is selected to match the spool bore).
4. Inspect the input rod and piston assembly for corrosion, nicks, scoring or excessive wear. If the piston is damaged, the input rod and piston assembly should be replaced.

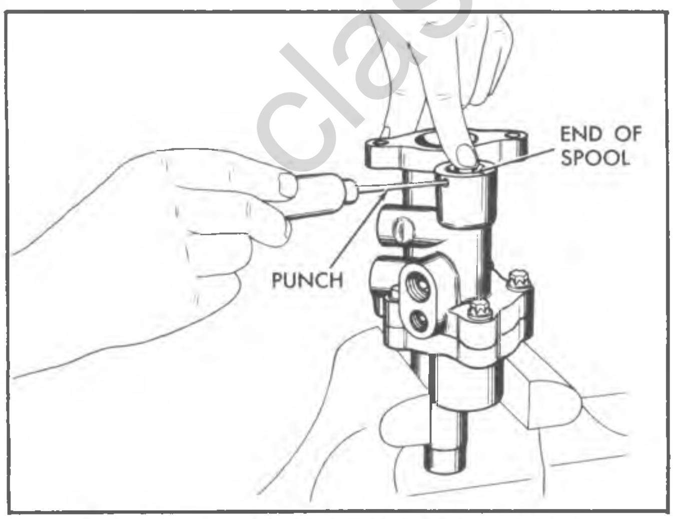


Fig. 7--Removing Spool Plug from Booster (Typical)

5. Inspect the piston bore in the booster housing for corrosion, nicks, scoring or other damage. If the bore is damaged, the entire booster must be replaced as an assembly.

Assembly

CAUTION: *Be sure to keep parts clean until reassembly. Re-wash at reassembly if there is any occasion to doubt cleanliness - such as parts dropped or left exposed for eight hours or longer.*

Lubricate all seals and metal friction points with power steering fluid.

Whenever the booster is disassembled, all seals, tube inserts and bracket nut should be replaced. All of these parts are included in a seal kit. If any of the accumulator valve components are damaged or lost, replace all valve components (all are included in charging valve kit).

1. Position a **NEW** tube seat in each booster port and screw a spare tube nut in each port to press the seat down into the port. Do not tighten the tube nuts in the port as this may deface the seats.
2. Remove the spare tube nuts and check for aluminum chips in the ports. Be sure that any foreign matter is removed.
3. Coat the piston bore and the piston seal with clean power steering fluid, and assemble the **NEW** seal in the bore. The lip of the seal must be toward the rear (away from the master cylinder mounting flange). Be sure the seal is fully seated in the housing.
4. Lubricate the input rod end, **NEW** input rod seals and Seal Installer Tool J-24553 with clean power steering fluid. Slide the seals on the tool with the lip of the cups toward the open end of the tool (fig. 8).
5. Slide the tool over the input rod end and down to the second groove; then slide the forward seal off the tool and into the groove. Assemble the other seal in the first groove. Be sure that both seals are fully seated.
6. Lubricate the piston and Piston Installing Tool J-24551 with clean power steering fluid. Insert the large end of the tool into the piston (fig. 9), and slide the tool and piston into the piston bore and through the piston seal.
7. Assemble the **NEW** "O" ring onto the **NEW** accumulator check valve, and dip the assembly in clean power steering fluid. Insert the check valve into the accumulator valve recess in the housing flange.

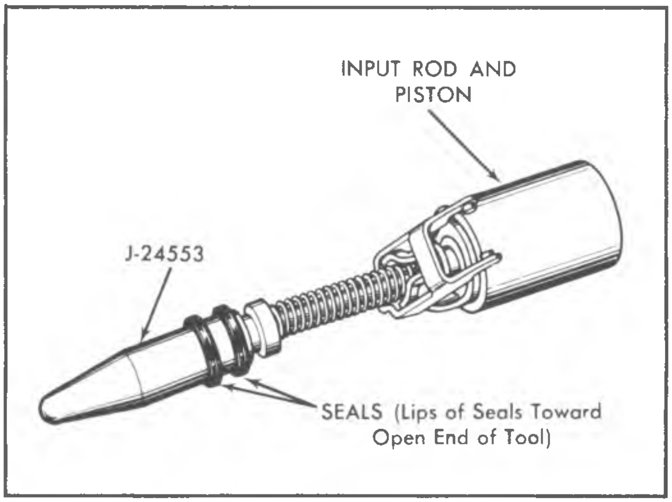


Fig. 8--Installing Input Rod Seals

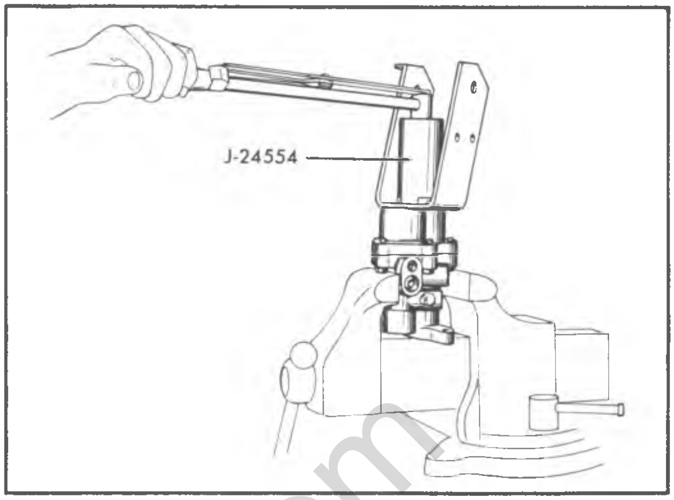


Fig. 10--Installing Mounting Bracket Nut (Typical)

8. Assemble the new ball and spacer in the same recess.
9. Assemble the **NEW** "O" ring onto the charging valve plunger seat and insert the plunger into the seat. Dip the assembly in clean power steering fluid, and insert it into the charging valve recess.
10. Dip the spool assembly in clean power steering fluid, and insert the assembly into the spool bore in the housing. Be sure that the pivot pins on the upper end of the input rod lever assembly are engaged in the groove in the sleeve. Remove Tool J-24551 from the piston assembly.
11. Position a **NEW** housing seal in the groove in the housing cover. Then join the booster housing and cover and secure with five screws. Tighten the screws to 18-26 ft. lbs. using special socket J-25085.

CAUTION: *See "Caution" on Page 1 of this section.*

12. Assemble a **NEW** "O" ring seal on the spool plug. Insert the spool spring and the spool plug in the forward end of the spool bore. Press in on plug and assemble the plug snap ring in the groove in the bore.

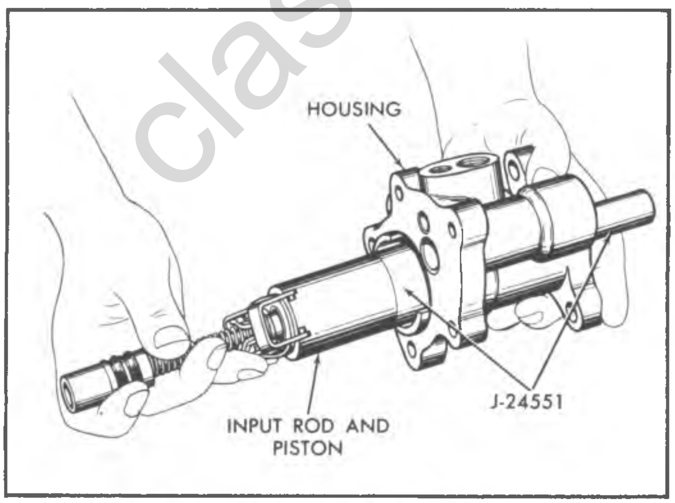


Fig. 9--Installing Input Rod and Piston Assembly into Booster (Typical)

13. Position the mounting bracket on the booster. The tab on the inside diameter of the large hole in the bracket should fit into a slot in the threaded portion of the booster hub.
14. Install the **NEW** bracket nut with the staking groove outward on the threaded hub of the booster. Using Tool J-24554 and a torque wrench (fig. 10), tighten the nut to 95-120 ft. lbs.

CAUTION: *See "Caution" on Page 1 of this section.*

15. Use a hammer and a small punch inserted into the staking groove of the nut, at the slot in the booster hub (fig. 11), to stake the nut in place. Be sure that the outer thread of the nut is upset.

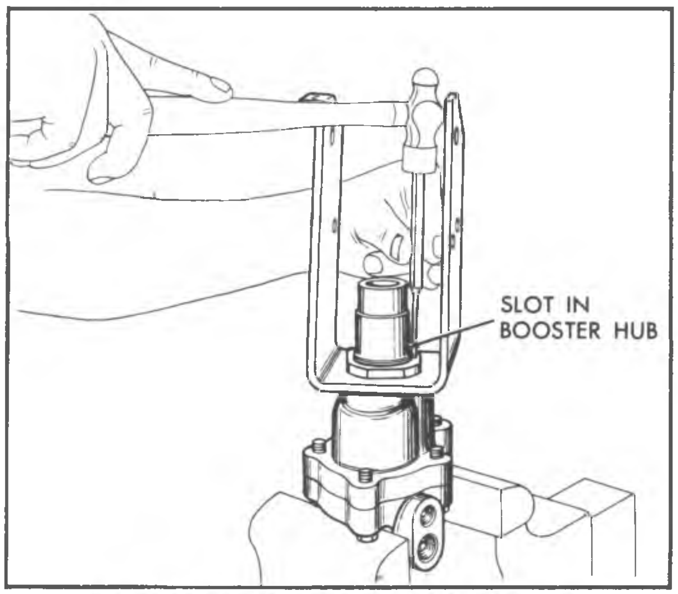


Fig. 11--Staking Mounting Bracket Nut (Typical)

16. Assemble a **NEW** boot (if used) on the pedal rod. Then assemble a **NEW** grommet in the groove near the end of the pedal rod.

17. Moisten the grommet with water (to ease assembly), and insert the grommet end of the pedal rod into the input rod end of the booster housing. Push on the end of the pedal rod to seat the grommet in the groove inside the housing.

    NOTE: When the grommet is fully seated, the pedal rod will rotate freely with no binding.

18. Slide the boot on the pedal rod and assemble the large end of the boot onto the hub of the power section.

SPECIAL TOOLS

1.	J-4880	Snap Ring Pliers
2.	J-25085	Special Socket
3.	J-21183	Height Gauge
4.	J-21524	Power Piston Remover and Installer
5.	J-21601	Power Brake Retainer and Installer
6.	J-22657	Bushing Retainer Socket
7.	J-22647	Height Gauge
8.	J-22677	Power Cylinder Seal Installer
9.	J-22733	Seal Installer and Protector
10.	J-22805	Power Cylinder Holding Fixture
11.	J-22839	Front Plate Holding Fixture
12.	J-22893	Booster Separating Adapter
13.	J-23101	Power Piston Holding Tool
14.	J-23175	Control Valve Installer
15.	J-23188	Secondary Bearing Protector
16.	J-24551	Piston Installer
17.	J-24553	Input Rod Seal Installer
18.	J-24554	Socket
19.	J-24569	Pedal Push Rod Remover
20.	J-9504	Power Cylinder Spanner Wrench

Fig. 12--Special Tools

SECTION 6

ENGINE

NOTE: Except for the following changes, all information listed in Section 6 of the 1974 Overhaul Manual is applicable to 1975 light duty trucks. Refer to 1974 Overhaul Manual for any procedure not contained herein.

REPAIR PROCEDURES

CAMSHAFT

Inspection

When checking the camshaft for alignment, using the "V" block method, the dial indicator will indicate the exact amount the camshaft is out of true. If it is out more than .008" dial indicator reading, the camshaft should be replaced.

REPAIRS

Piston Selection

Piston-to-bore clearance for all engines is increased by .0010" for 1975. Refer to page 6-35 (fig. 74) in the 1974 Overhaul Manual.

SECTION 6M

CARBURETOR

CONTENTS OF THIS SECTION

INTRODUCTION

A carburetor is designed to meet the particular requirements of the engine, transmission and vehicle and although they may look alike, they are not always interchangeable. Refer to carburetor part number and/or specifications.

This section, divided into sub-sections by carburetor model, covers the repair procedures for the various carburetors, assembly and disassembly procedures and internal carburetor adjustment. Although illustrations showing bench operations are used, most single operations, when not part of a general overhaul, should be performed (if practical) with the carburetor on the engine. Typical illustrations and procedures are used except where specific illustrations or procedures are necessary to clarify the operation.

Refer to 1974 Passenger Car and Light Duty Truck Overhaul Manual for overhaul procedures on the Rochester 4MV carburetor used on a heavy duty truck.

Refer to Light Duty Truck Service Section for external carburetor adjustment procedures.

ROCHESTER 1MV CARBURETOR

INDEX

DISASSEMBLY

Air Horn

Removal

1. Remove auxiliary vacuum break diaphragm assembly from air horn by removing two attaching screws. Remove auxiliary vacuum break diaphragm plunger from vacuum diaphragm link which is permanently attached to the choke lever. The lever and link assembly can be removed, if desired, during choke valve removal (Fig. 1).
2. Remove fast idle cam from boss on float bowl by removing attaching screw. Then, remove fast idle cam from choke rod and choke rod from upper choke lever (Fig. 2). Note position of rod and cam for ease in reassembly.

   NOTE: Upper choke lever is spun on end of choke shaft and cannot be removed.
3. Remove six air horn to bowl attaching screws and lockwashers (three long and three short screws).
4. Remove primary vacuum break diaphragm unit from the air horn casting. Then, remove the vacuum break hose assembly and link from slotted diaphragm plunger stem.
5. Remove air horn by lifting straight up, invert and place on clean bench. Air horn to float bowl gasket can remain on bowl for removal later.

Disassembly

1. If desired, the choke valve and choke shaft can be removed from air horn by first removing the thermostatic coil lever from the end of choke shaft by removing attaching screw.

   Remove the two choke valve attaching screws; then, remove the choke valve and choke shaft from air horn.

   The choke valve screws are held in place by Loctite

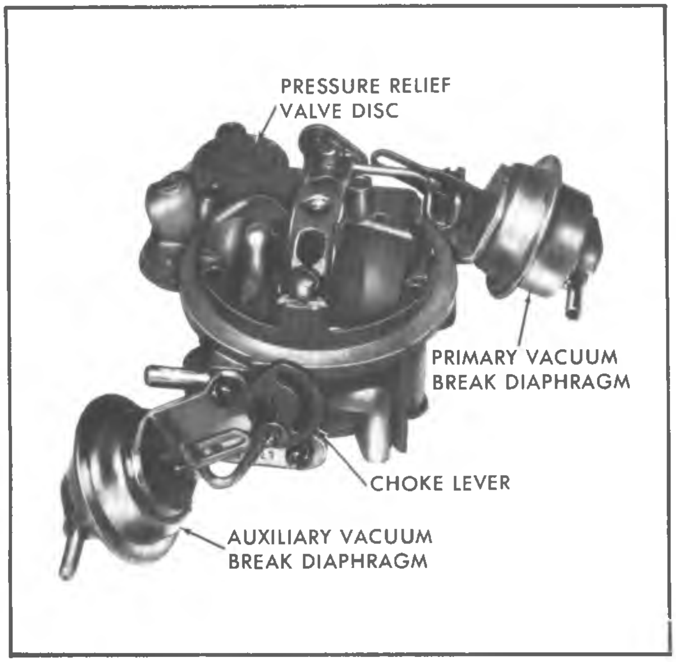


Fig. 1—Air Horn Assembly

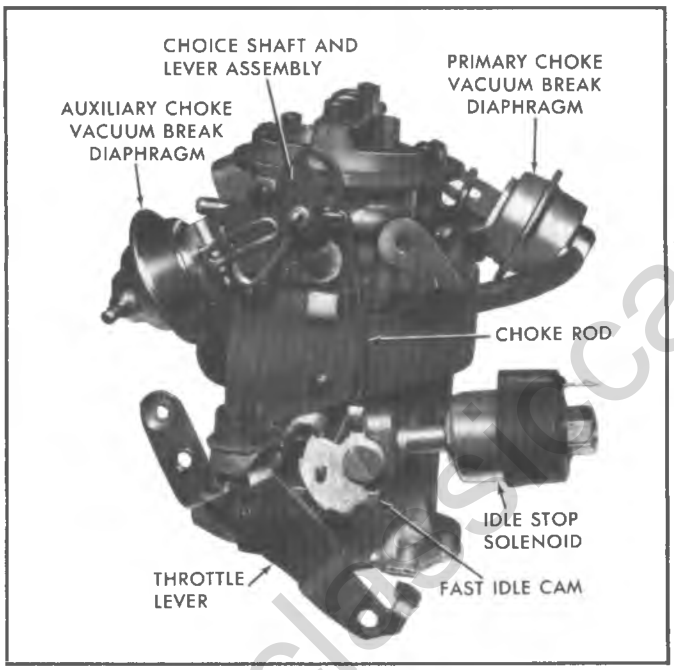


Fig. 2—1MV Carburetor

or equivalent so it will be necessary to restake or use Loctite or equivalent during assembly.

2. No further disassembly of the air horn is necessary. The pressure relief valve disc need not be removed from the top of the air horn for cleaning purposes.

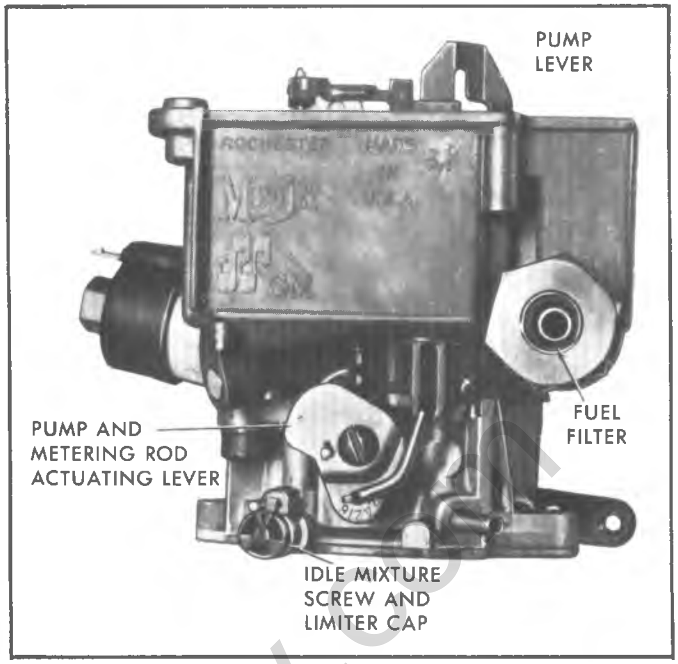


Fig. 3—Float Bowl Assembly

Float Bowl (Fig. 3)

1. Remove air horn to float bowl gasket. Gasket is slit next to metering rod lever so that it can be slid over lever for ease in removal.
2. Remove float assembly from float bowl by lifting upward on float hinge pin. Remove hinge pin from float arm (Fig. 4).
3. Remove float needle from seat.
4. Disconnect accelerator pump and power piston

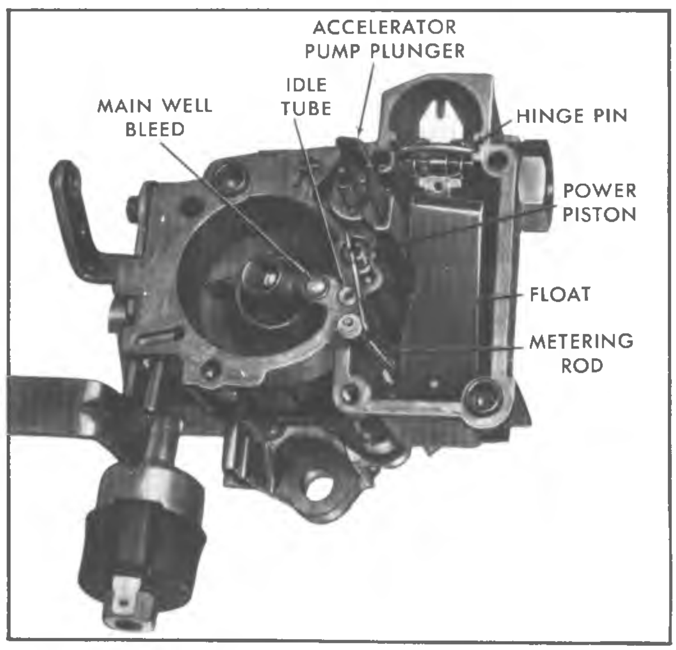


Fig. 4—Float and Accelerator Pump

actuator lever from end of throttle shaft by removing lever attaching screw (Fig. 4).

5. Hold down on power piston while removing lever. Power piston spring and metering rod assembly may now be removed from float bowl (Fig. 4).
6. Remove lower end of power piston link from actuator lever by rotating until tang on rod slides out of notch in lever.
7. Remove actuator lever from lower end of accelerator pump link in same manner.
8. Push down on accelerator pump and remove actuator link by rotating until tang on rod is aligned with slot on pump plunger lever. Remove the link.
9. Remove pump assembly from float bowl.
10. Remove pump return spring and power piston spring from float bowl.
11. Remove "T" guide and pump discharge spring using needle nose pliers. (Fig. 5).
12. Pump discharge ball and idle tube can be removed at the same time by inverting the bowl.
13. Remove main metering jet from bottom of fuel bowl.
14. Remove float needle seat and gasket.
15. Remove two screws from idle compensator cover (A.T. only). Then remove cover, hot idle compensator and seal from recess in bowl.
16. The idle stop solenoid can be removed at this time, if desired.
17. Remove the fuel inlet nut and gasket; then, remove the filter and relief spring.

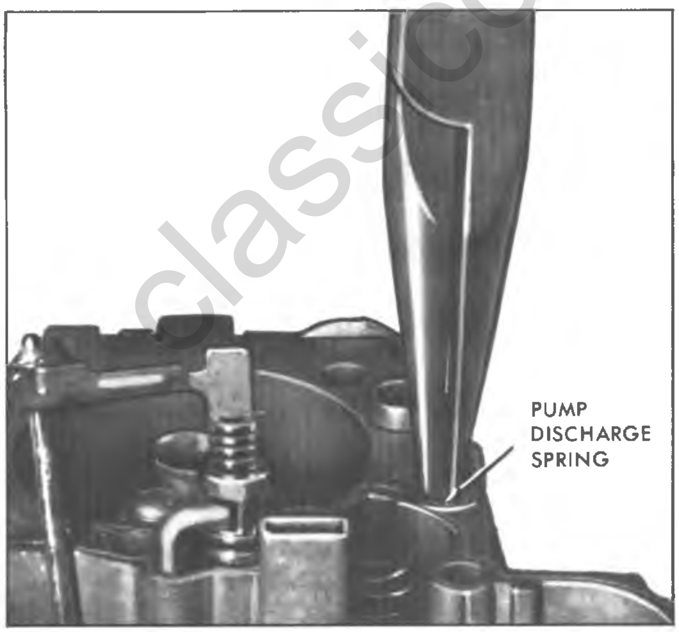


Fig. 5—Removing Pump Discharge Spring

No further disassembly of the float bowl is required.

Throttle Body (Fig. 6)

1. Invert carburetor bowl on bench and remove two throttle body to bowl attaching screws and lockwashers. Throttle body and insulator gasket may now be removed.
2. No further disassembly of the throttle body is necessary unless the idle mixture needle is damaged or the idle channels need cleaning. If necessary to remove the idle mixture needle, cut the tang from the plastic limiter cap. Do not install a replacement cap as a bare mixture screw is sufficient to indicate that the mixture has been readjusted.

   NOTE: Due to the close tolerance fit of the throttle valve in the bore of the throttle body, do not remove the throttle valve or shaft.

CLEANING AND INSPECTION

The carburetor should be cleaned in a cold immersion type cleaner.

1. Thoroughly clean carburetor castings and metal parts in an approved carburetor cleaner such as Carbon X (X-55) or its equivalent.

   Rubber and plastic parts should not be immersed in carburetor cleaner. However, the air horn which has the plastic relief valve will withstand normal cleaning in carburetor cleaner.
2. Blow out all passages in castings with compressed air. Do not pass drills through jets or passages.
3. Examine float needle and seat assembly for wear. Install a new factory matched set if worn.
4. Inspect upper and lower casting sealing surfaces for damage.

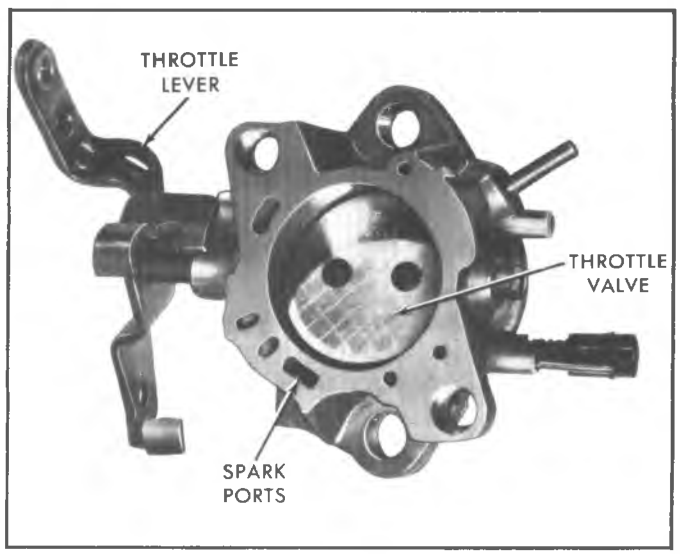


Fig. 6—Throttle Body Assembly

5. Inspect holes in levers for excessive wear or out of round condition. If levers are worn they should be replaced.
6. Examine fast idle cam for excessive wear or damage.
7. Check throttle and choke levers and valves for binds and other damage.
8. Check all springs for distortion or loss in tension; replace as necessary.

NOTE: When carburetor has been disassembled, new gaskets and filter must be used.

ASSEMBLY

Throttle Body

1. Invert float bowl and install new throttle body to bowl insulator gasket.
2. Install throttle body on bowl gasket so that all holes in throttle body are aligned with holes in gasket.
3. Install two throttle body to bowl attaching screws and lockwashers. Tighten even and securely to 15 ft. lbs.

Float Bowl

1. Install idle stop solenoid, if removed.
2. (A.T. only) Install seal into recess in idle compensator cavity in float bowl, then install compensator assembly.
3. Install idle compensator cover, retaining with two attaching screws. Tighten securely.
4. Install main metering jet into bottom of fuel bowl. Tighten securely.
5. Install needle seat and gasket.
6. Install idle tube flush with bowl casting.
7. Install pump ball, spring and "T" into pump discharge hole.
8. Push down on pump discharge "T" until flush with bowl casting. (Fig. 4).
9. Install fuel filter spring, filter, inlet nut and gasket.
10. Install accelerator pump return spring.
11. Install power piston return spring into piston cavity in the bowl.
12. Install power piston actuating rod (right angle end) into slot in the power piston.
13. Install piston, metering rod and actuating rod assembly into the float bowl. End of actuating rod must enter hole in bowl. Locate metering rod into jet orifice.
14. Install pump plunger assembly into pump well with actuating lever protruding through bottom of bowl casting. Push downward on pump lever and install pump assembly drive link into slot in lower end of shaft. Ends of drive link point inboard toward carburetor bore. Tang on upper end of link retains link to pump shaft. (Fig. 4).
15. Install lower end of pump link into actuator lever which fits on throttle shaft.
16. Install curved power piston actuator link into throttle actuator lever. End protrudes outward away from throttle bore and has tang which retains link to lever.
17. Before fastening power piston and pump actuator lever to end of throttle shaft, hold power piston assembly down and slide upper end of curved power piston actuator link into lower end of power piston actuator rod.
18. Install actuating lever on end of throttle shaft by aligning flats on lever with flats on shaft. Install lever retaining screw and tighten securely.
19. Install float needle valve into needle seat.
20. Install float hinge pin into float arm. Then install float and hinge pin into float bowl.

Float Level Adjustment (Fig. 7)

1. Hold float retaining pin firmly in place and push down on float arm at outer end against top of float needle.
2. Use adjustable "T" scale and measure distance from top of float at index point on toe to float bowl gasket surface (gasket removed).
3. Bend float pontoon up or down at float arm junction to adjust.

Metering Rod Adjustment (Fig. 8)

1. Open throttle valve, slide metering rod out of holder and remove from main metering jet.
2. To check adjustment, back out idle stop solenoid and rotate fast idle cam so that fast idle cam follower is not contacting steps on cam.

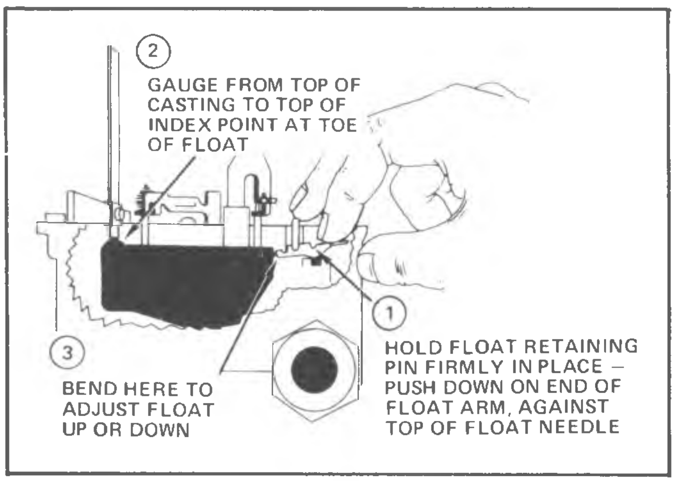


Fig. 7—Float Level Adjustment

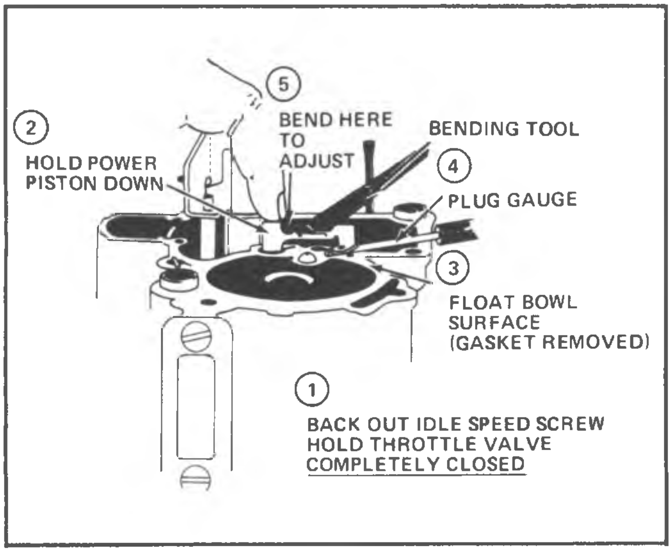


Fig. 8—Metering Rod Adjustment

3. With throttle valve completely closed, apply pressure to top of power piston and hold piston down against its stop.
4. Holding downward pressure on power piston, swing metering rod holder over flat surface of bowl casting next to carburetor bore.
5. Insert gauge between bowl casting and lower surface of metering rod holder. Gauge should have a slide fit between both surfaces, as shown.
6. To adjust, carefully bend metering rod holder up or down.
7. After adjustment, install metering rod and spring assembly. Install rod in jet, then install in hanger.
8. Install air horn gasket on float bowl by carefully sliding slit portion of gasket over metering rod holder. Then align gasket with dowels provided on top of bowl casting and press gasket firmly in place.

Air Horn

1. Install choke shaft assembly and choke valve into air horn, if removed. Align choke valve, tighten two retaining screws and stake securely or use Loctite or equivalent.
2. Install air horn to float bowl by lowering gently onto float bowl until seated. Install three long and three short air horn to float bowl attaching screws and lockwashers. Tighten screws securely.

   Install the primary choke vacuum break diaphragm assembly under the two short air horn screws next to the thermostatic coil lever. Connect the choke vacuum break diaphragm link to slotted diaphragm plunger stem and install lever to the end of the choke shaft, using retaining screw. Tighten all screws securely.
3. Install the choke vacuum break diaphragm hose to the diaphragm on air horn and tube on float bowl.
4. Assemble choke rod into the slot in the upper choke lever. End of rod points away from air horn casting when installed properly.
5. Install lower end of choke rod into fast idle cam. Steps on fast idle cam should face fast idle tang on throttle lever. Install fast idle cam to boss on float bowl with attaching screw. Tighten securely.
6. Install auxiliary vacuum break diaphragm link attached to the choke lever to slot in the diaphragm plunger stem. Then, install the auxiliary vacuum break diaphragm unit to air horn using two attaching screws. Tighten securely.

ROCHESTER 2GC

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GENERAL

Flooding, stumble on acceleration and other performance complaints are, in many instances, caused by the presence of dirt, water or other foreign material in the carburetor. To aid in diagnosing the cause of complaint, the carburetor should be carefully removed from the engine without draining fuel from the bowl. The contents of the fuel may then be examined for dirt or water problems as the carburetor is disassembled.

The following is a step-by-step sequence by which the model 2GC carburetor (Fig. 1C) may be completely disassembled and reassembled. Adjustments may be made and various parts of the carburetor may be serviced without completely disassembling the entire unit. Refer to service section for external adjustments.

DISASSEMBLY

Air Horn

1. Remove fuel inlet filter nut and gasket, and remove filter and spring.
2. Disconnect lower end of pump rod from throttle lever by removing spring clip (Fig. 2C).

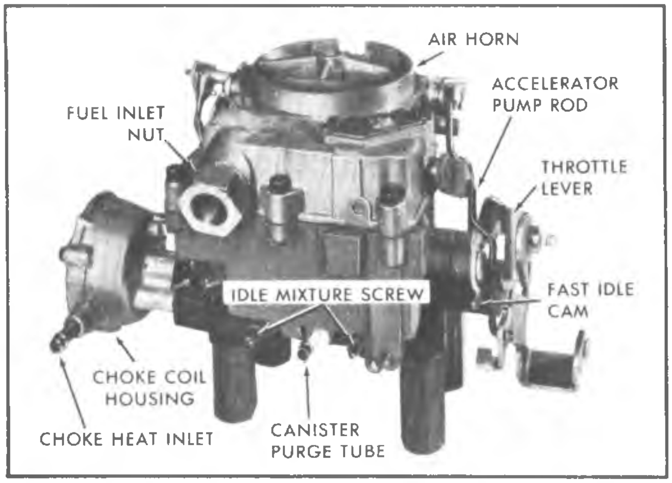


Fig. 1C—Rochester 2GC Carburetor

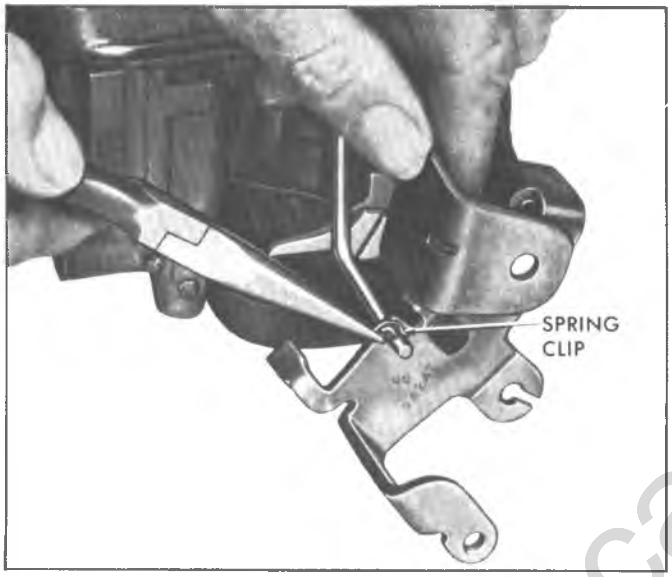


Fig. 2C—Removing Pump Rod Spring Clip

3. Remove upper end of pump rod from pump lever by rotating rod out of hole in lever.
4. Remove the vacuum break diaphragm hose from tube on throttle body and tube on vacuum break diaphragm unit. Then remove the vacuum break diaphragm assembly from air horn by removing two attaching screws. Remove diaphragm and link assembly from lever on end of choke shaft.
5. Remove vacuum break lever from end of choke shaft by removing retaining screw in end of shaft. Then, remove the intermediate choke rod from the vacuum break lever and from the lever on the thermostatic coil housing.
6. Remove fast idle cam attaching screw from side of float bowl. Remove fast idle cam from end of choke rod by rotating rod out of hole in fast idle cam. The upper end of the choke rod cannot be removed from the choke lever until after the air horn has been removed from the float bowl.
7. Remove eight air horn attaching screws and lockwashers, then lift air horn from float bowl (Fig. 3C).
8. Place air horn on flat surface. Remove float hinge pin and lift float from air horn. Float needle, and pull clip (if used), may now be removed from float arm (Fig. 4C).
9. Remove float needle seat and gasket with a wide blade screwdriver.
10. Remove power piston by depressing stem and allowing it to snap free. Use care not to bend the power piston stem.
11. Remove the pump plunger assembly and inner pump lever from pump shaft by loosening set screw on inner lever. To remove the pump plunger stem from the inner pump lever it will be necessary to break off the swedged or flattened end of the pump

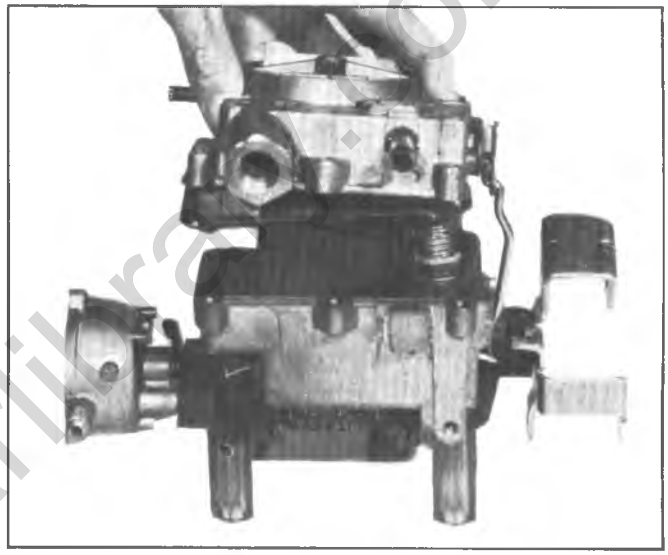


Fig. 3C—Removing Air Horn

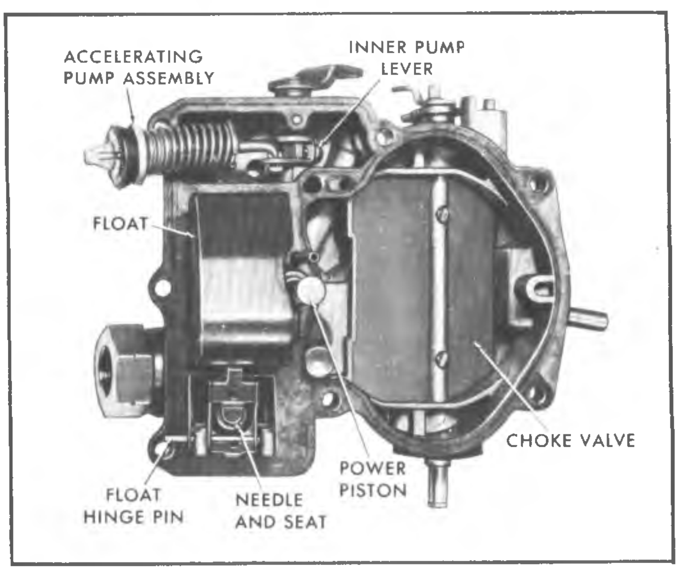


Fig. 4C—Air Horn

plunger stem. This should not be done unless pump assembly replacement is necessary, such as during overhaul. The service pump assembly uses a grooved pump plunger stem and retaining clip. After removing the inner pump lever and pump assembly, remove the outer pump lever and shaft assembly from air horn. Remove the plastic washer on pump plunger shaft.

12. Remove air horn gasket from air horn.
13. Remove fuel inlet baffle next to needle seat.
14. Remove two choke valve attaching screws, then remove choke valve. Care should be taken when removing attaching screws so that the choke shaft will not be bent. It may be necessary to file off staked ends on choke valve screws before removing.
15. Remove choke valve shaft from air horn.
16. Remove the fast idle cam rod and lever from the choke shaft.

Float Bowl

1. Remove pump plunger return spring from inside pump well. Then remove aluminum check ball from bottom of pump well by inverting bowl (Fig. 5C).
2. Remove main metering jets, power valve and gasket from inside float bowl.
3. Remove three screws holding venturi cluster to float bowl and remove cluster and gasket. Then remove the plastic main well inserts in the main well cavity.
4. Using a pair of long nosed pliers, remove pump discharge spring retainer (Fig. 6C). Then, spring and check ball may also be removed from discharge passage.
5. Invert carburetor and remove three large throttle body to bowl attaching screws and lockwashers. Throttle body and gasket may now be removed.

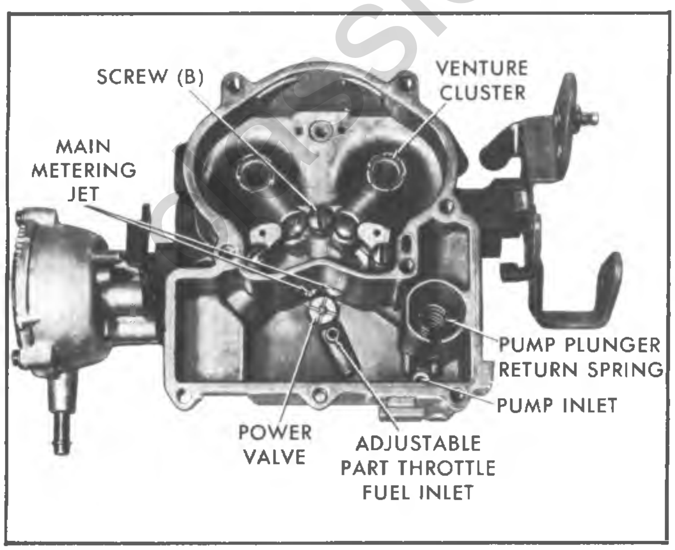


Fig. 5C—Float Bowl

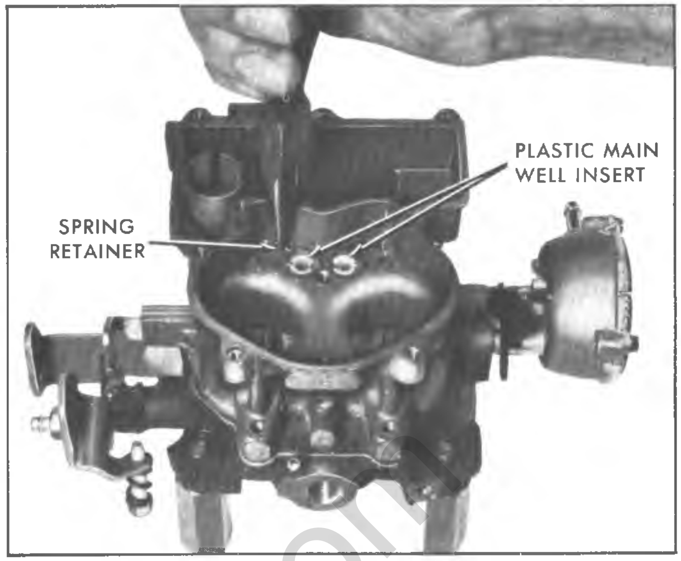


Fig. 6C—Removing Spring Retainer

Throttle Body

1. Remove the three choke cover attaching screws and retainers, then remove thermostatic coil and cover assembly and gasket from choke housing (Fig. 7C).

   CAUTION: *Do not remove cup baffle from beneath thermostatic coil cover because coil distortion may result.*

2. Remove baffle plate from inside choke housing (Fig. 8C).
3. Remove the two choke housing attaching screws from inside choke housing, then remove choke housing and gasket from throttle body casting.
4. Remove screw from end of intermediate choke shaft and remove intermediate choke lever from shaft (Fig. 9C). Remove inner choke coil lever and shaft assembly from choke housing. Remove rubber dust seal from inside choke housing.
5. The idle mixture needles have been adjusted and set at the factory and capped, to prevent excessive adjustment in the field. However, the carburetor has a limited idle mixture adjustment. If it is necessary to remove the idle mixture needles for cleaning

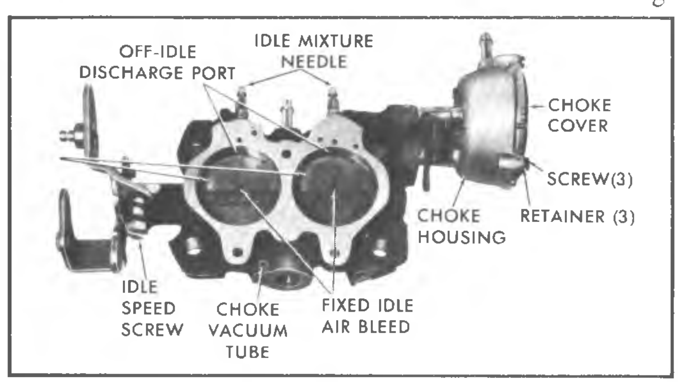


Fig. 7C—Throttle Body

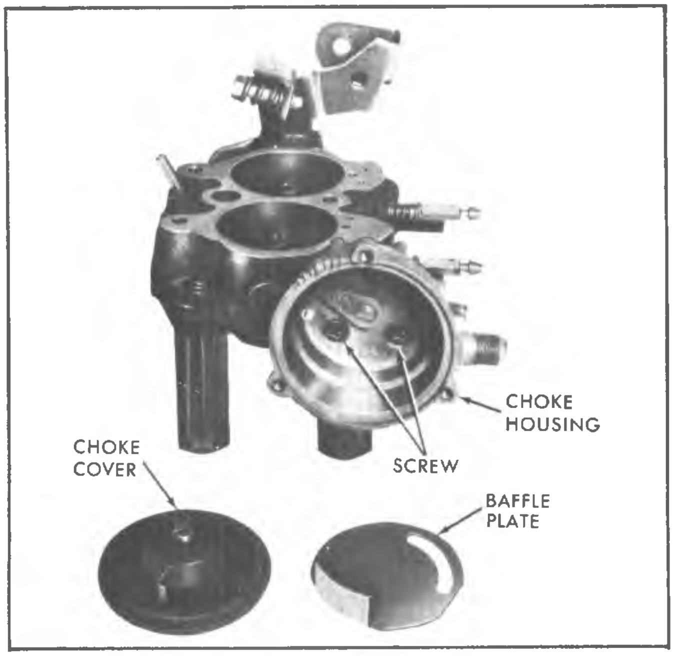


Fig. 8C—Carburetor Choke

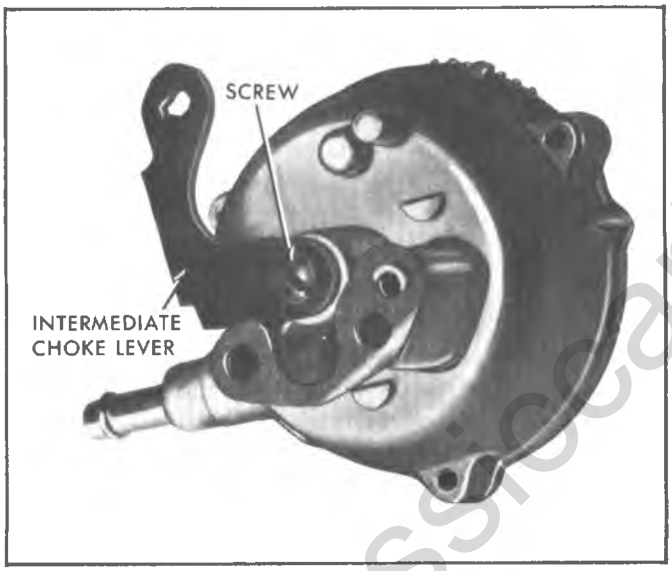


Fig. 9C—Choke Housing

purposes or if they are defective, the following procedure should be used:

Using a pair of side cutter pliers, clip off the limit tang on the limiter cap. Then unscrew the idle mixture screw and spring from throttle body. If new idle mixture needles are installed, no plastic limiter caps are required. If the original idle mixture needles had to be removed, install the idle mixture needle and springs into throttle body as described under Assembly. No further disassembly of the throttle body is necessary.

CAUTION: *No attempt should be made to remove the throttle valves or shaft as it may be impossible to reassemble the throttle valves correctly in relation to the idle discharge orifices.*

CLEANING AND INSPECTION

Dirt, gum, water or carbon contamination in or on exterior moving parts of the carburetor are often responsible for unsatisfactory performance. For this reason, efficient carburetion depends upon careful cleaning and inspection while servicing.

1. Thoroughly clean carburetor casting and metal parts in an approved carburetor cleaning solution. (Example: X-55 or equivalent).

   CAUTION: *Any rubber parts, plastic parts, diaphragm assemblies, pump plungers, should not be immersed in carburetor cleaner.*

2. Blow out all passages in castings dry with compressed air and blow off all parts until they are dry.

   CAUTION: *Do not pass drills or wires through calibrated jets or passages as they may enlarge orifices and seriously affect carburetor calibration.*

3. Check all parts for wear. If wear is noted, defective parts must be replaced. Note especially the following:

   a. Check float needle and seat for wear. If wear is noted, the assembly must be replaced.

   b. Check float lip for wear and float for damage. Repair or replace as necessary.

   c. Visually check throttle and choke shaft bores in throttle body and cover castings for wear and out of round. Repair or replace as necessary.

   d. Inspect idle adjusting needles (if removed) for burrs or ridges, or being bent. Such a condition requires replacement.

   e. Inspect fast idle cam. If wear is noted on steps of cam, it should be replaced as it may upset engine idle speed during the warm-up period.

   f. Inspect the pump plunger cup and expander spring. Replace plunger if cup or spring is damaged or distorted.

   g. Inspect power piston and spring for burrs or being bent. Replace as necessary.

4. Check filters for dirt or lint. Replace as necessary.
5. Inspect venturi cluster casting. If any parts in casting are loose or damaged, the cluster assembly must be replaced.
6. Use new gaskets in reassembly.

ASSEMBLY

Throttle Body

1. Install idle speed screw and spring assembly in throttle body if removed (Fig. 7C).
2. If it was necessary to remove the idle mixture needles, install the idle mixture needles and springs into the throttle body until finger tight and seated. Back out screws four turns as a preliminary idle adjustment.
3. Install new rubber dust seal into cavity inside choke housing (Fig. 9C). Lip on seal faces towards carburetor after the housing is installed.
4. Install inner choke coil lever and shaft assembly into choke housing.
5. With the choke coil lever and shaft assembly installed into housing, install the intermediate choke lever on flats of intermediate choke shaft and retain with screw. Tighten securely.
6. Install new choke housing to carburetor gasket.
7. Position choke housing on throttle body and retain with two attaching screws. Tighten securely (Fig. 8C).
8. Before installing the choke cover coil and baffle plate assembly, refer to intermediate choke rod adjustment (Service) to adjust intermediate choke rod so that with the choke valve closed, the lever inside the choke housing lines up with gauge.
9. Install choke thermostatic coil and cover assembly with new gaskets and end of coil below plastic tang on the inner choke housing lever. Refer to automatic choke coil adjustment (Service) to index cover. Install three choke thermostatic coil retainers and screws. Tighten securely (Fig. 7C).
10. Place a new gasket on the bottom of the float bowl with holes in gasket aligned with holes in casting,then position the throttle body on gasket and install the three attaching screws. Tighten screws evenly and securely.

Float Bowl

1. Install two main metering jets into bottom of float bowl (Fig. 5C).
2. Install power valve and gasket into bottom of float bowl using slotted screwdriver. Tighten securely.
3. Drop small aluminum inlet check ball into hole in pump well. install pump return spring, pressing with finger to center in pump well.
4. Drop steel pump discharge ball into pump discharge hole located beneath the venturi cluster. Ball is 3/16" diameter (do not confuse with aluminum inlet ball). Install pump discharge ball spring and retainer.
5. Install plastic main well inserts into the main fuel wells located beneath the venturi cluster and make sure they are seated in recesses provided (Fig. 6C). Then install venturi cluster and gasket, tighten three screws evenly and securely. Make certain center screw is fitted with a gasket to prevent pump discharge leakage.

Air Horn (Fig. 4C)

1. Install the upper choke rod lever and collar assembly on to choke shaft. Then install the choke shaft assembly into the air horn from the throttle lever side. Then install the choke valve onto the choke shaft with the letters "RP" or part number facing upward.

   Install the choke valve attaching screws. Center the choke valve before tightening choke valve screws. Tighten choke valve screws and stake lightly in place. Check choke and shaft for freedom of movement.
2. If removed, install the outer pump shaft and lever assembly into air horn casting. Make sure the plastic washer is in place before installing the outer pump shaft and lever assembly.
3. Install the pump plunger to the inner lever and retain with clip provided in the repair kit. End of pump plunger shaft should point inward towards center of carburetor when installed correctly. Then install inner pump lever onto the pump shaft and tighten set screws securely.
4. Position the float needle seat gasket on the needle seat and install seat in the air horn. Tighten securely.
5. Install the power piston assembly into the air horn casting and lightly stake the retaining washer to casting. Make sure the piston travels up and down freely and is not bent.
6. Install fuel inlet baffle next to needle seat. Make sure baffle is seated in grooves in air horn casting.
7. Install air horn gasket onto air horn casting.
8. Install float needle into needle seat. Then install float assembly on air horn and insert hinge pin. Check float action and for free movement of needle in the seat.
9. Check float level and drop adjustments.

Float Level Adjustment

With air horn inverted, gasket in place and needle seated measure distance from lip at toe of float to air horn gasket. Adjust float to specifications by bending the float arm at point shown (Fig. 10C).

Float Drop Adjustment

With air horn right side up so that float can hang free, measure distance from lip at toe of float air horn gasket. Adjust float drop to specifications by bending tang (Fig. 11C) at the rear of the float hanger.

10. Install choke rod in upper choke lever and collar

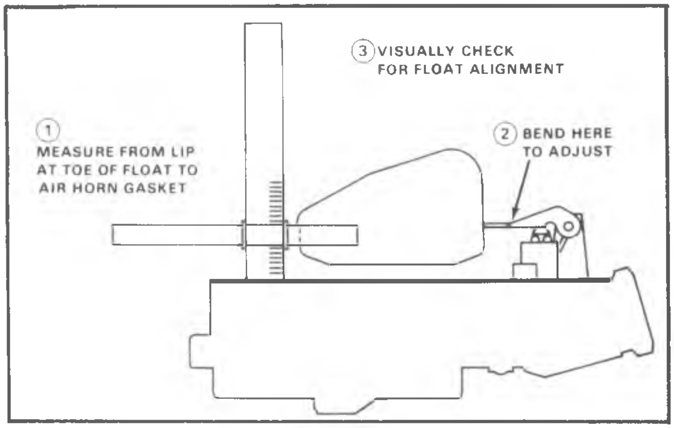


Fig. 10C—Float Level Adjustment

assembly rotating rod until squirt in end of rod aligns with slot in lever.

Air Horn to Float Bowl

1. Place the air horn assembly on bowl, making certain that the accelerator pump plunger is correctly positioned into pump well and will move freely.
2. Install lockwashers and tighten eight air horn attaching screws evenly and securely (Fig. 12C).
3. Install filter pressure relief spring into air horn casting, then install fuel inlet filter (gasket end facing nut) and fuel inlet nut and gasket. Tighten nut to 25 ft. lbs.
4. Install fast idle cam to lower end of choke rod (part number or identification faces outward on fast idle cam assembly). Then install the fast idle cam to float bowl retaining with the fast idle cam attaching screw. Tighten securely.

   Move linkage up and down to make sure that the cam will fall freely.
5. Install pump rod into upper pump lever by rotating

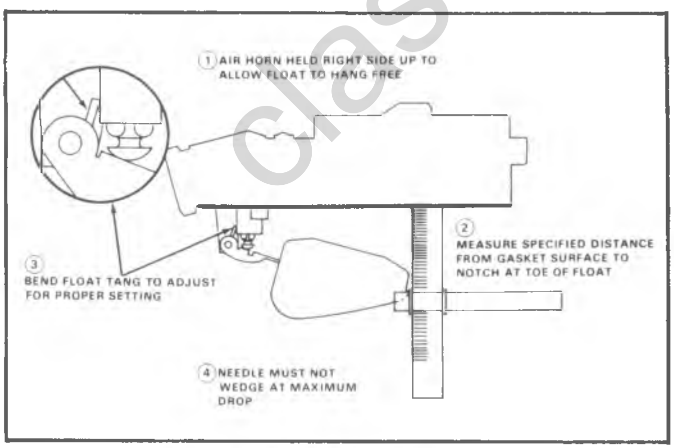


Fig. 11C—Float Drop Adjustment

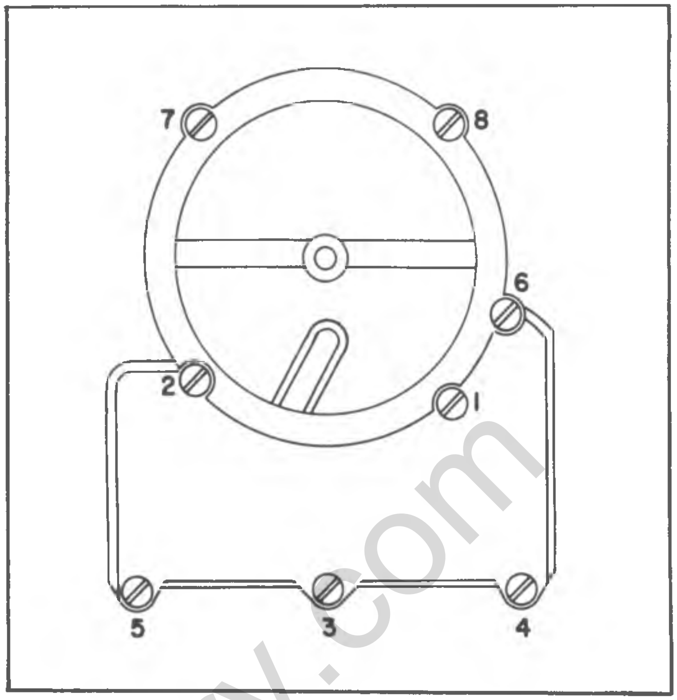


Fig. 12C—Air Horn Tightening Sequence

offset end into hole in lever and install lower end of pump rod to throttle lever and retain with a spring clip (Fig. 2C).

6. Install vacuum break diaphragm assembly onto air horn with two attaching screws. Tighten securely.
7. Install lower end of intermediate choke rod into intermediate choke lever on choke housing and connect upper end of rod to vacuum break lever. Install vacuum break diaphragm rod into stem of vacuum break diaphragm and vacuum break lever.
8. Install the vacuum break lever onto end of choke shaft making sure that the lever fits over flats on shaft. Install attaching screw and tighten securely.
9. Connect vacuum break hose to diaphragm unit and vacuum tube on throttle body.

After complete carburetor assembly, check and re-set (if necessary) all choke adjustments and pump rod adjustments.

M4MC/M4MCA QUADRAJET CARBURETOR

GENERAL

Before performing any service on the carburetor, it is essential that the carburetor be placed on a holding fixture such as Tool J-8328. Without the use of the holding fixture, it is possible to bend or nick throttle valves (Fig. 1MQ).

DISASSEMBLY

Idle Stop Solenoid (If Equipped)

Remove screws securing the idle stop solenoid and bracket to float bowl and remove solenoid and bracket assembly.

NOTE: Follow the above procedure to remove the throttle stop vacuum unit and bracket assembly used on some truck applications.

CAUTION: *The idle stop solenoid or throttle stop unit should not be immersed in any type of carburetor cleaner and should always be removed before complete carburetor overhaul.*

Air Horn

1. Remove upper choke lever from the end of choke shaft by removing retaining screw (Fig. 2MQ). Then rotate upper choke lever to remove choke rod from slot in lever.
2. Remove choke rod from lower lever inside the float bowl casting by holding lower lever outward with small screwdriver and twisting rod counterclockwise.

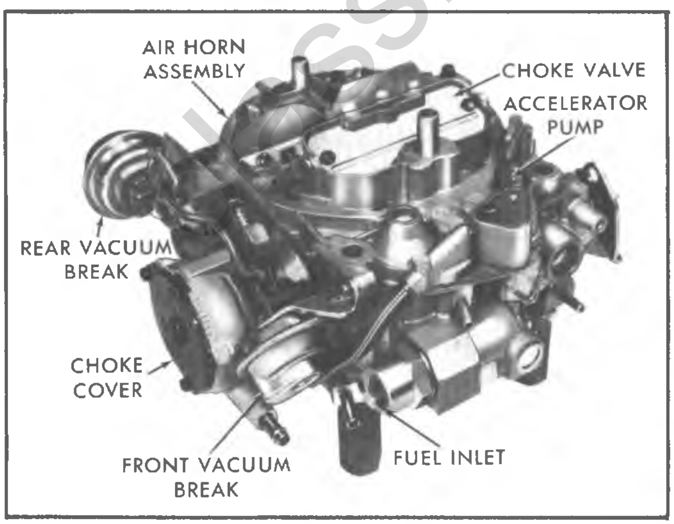


Fig. 1MQ—M4MC/M4MCA Quadrajet Carburetor

3. Remove vacuum hose from front vacuum break unit.
4. Remove secondary metering rods by removing the small screw in the top of the metering rod hanger. Lift upward on metering rod hanger until the secondary metering rods are completely out of the air horn. Metering rods may be disassembled from the hanger by rotating ends out of the holes in the end of the hanger. (Fig. 3MQ).
5. Using special tool J-25322, drive small roll pin (pump lever pivot pin) inward just enough until pump lever can be removed from air horn. Then remove pump lever from pump rod (Fig. 4MQ).

   CAUTION: *Use care in removing small roll pin to prevent damage to pump lever casting bosses in air horn.*

6. Remove nine air horn to bowl attaching screws; two attaching screws are located next to the venturi. (Two long screws, five short screws, and two countersunk screws). Remove secondary air baffle deflector, if used, from beneath the two center air horn screws (Fig. 5MQ).
7. Remove air horn from float bowl by lifting straight up. The air horn gasket should remain on the float bowl for removal later (Fig. 6MQ).

   CAUTION: *When removing air horn from float bowl, use care to prevent bending the small tubes protruding from the air horn. These tubes are permanently pressed into the air horn casting. DO NOT REMOVE.*

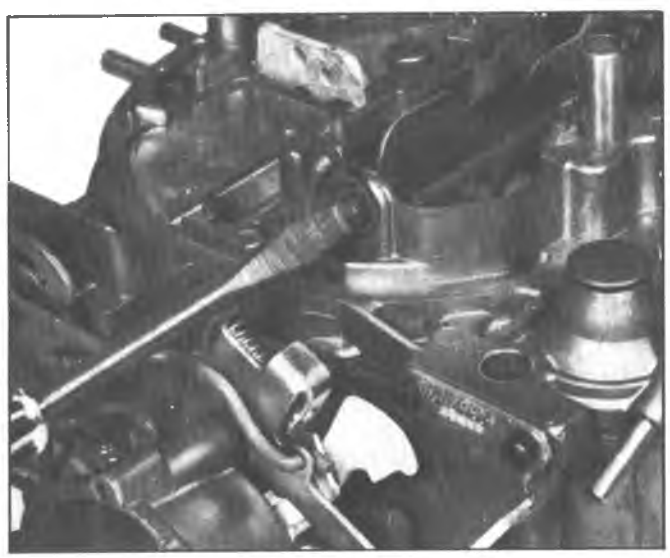


Fig. 2MQ—Removing Upper Choke Lever

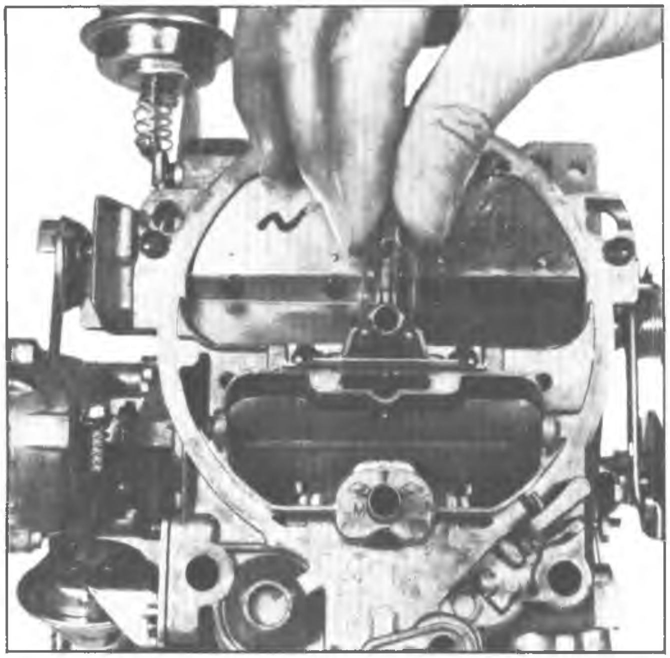


Fig. 3MQ—Removing Secondary Metering Rods

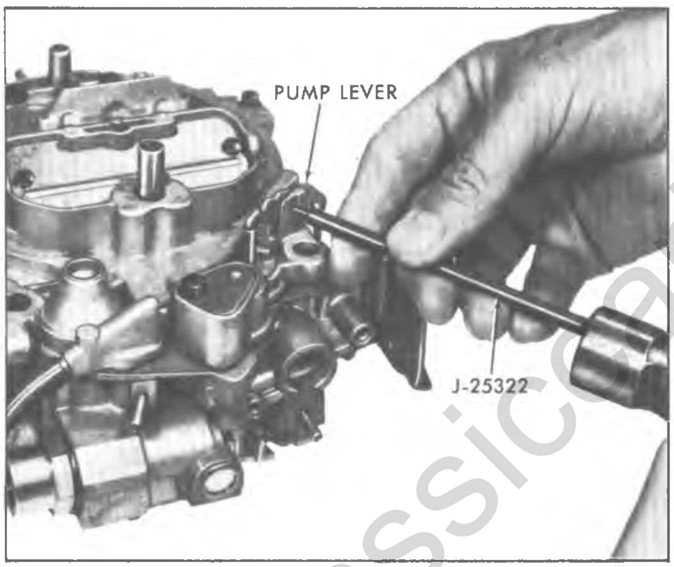


Fig. 4MQ—Removing Pump Lever

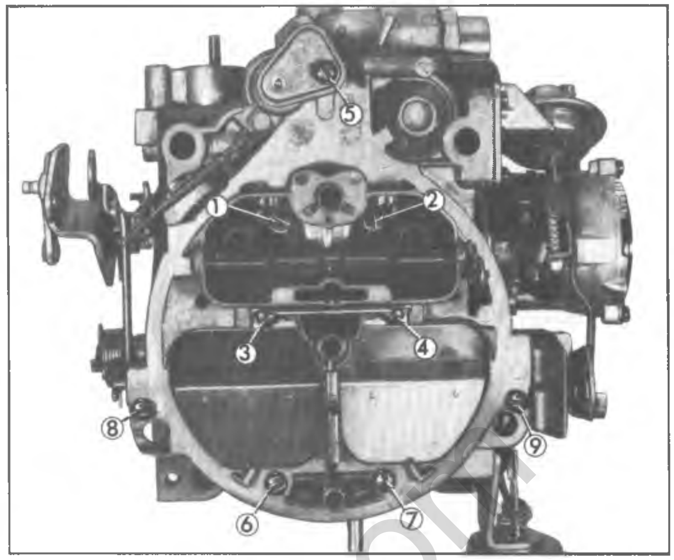


Fig. 5MQ—Removing Air Horn Screws

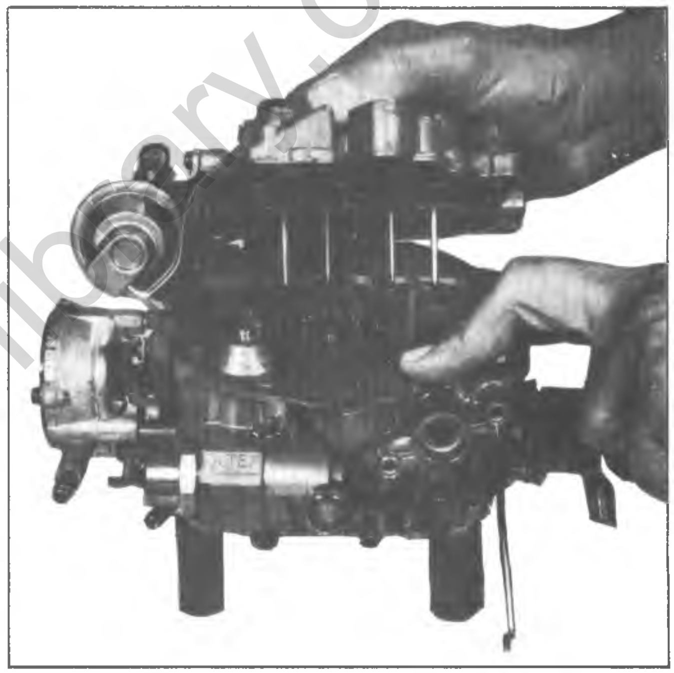


Fig. 6MQ—Removing Air Horn

Air Horn Disassembly

Remove front vacuum break bracket attaching screws. The diaphragm assembly may now be removed from the air valve dashpot rod and the dashpot rod from the air valve lever (Fig. 7MQ).

> **CAUTION:** *Do not place vacuum break assembly in carburetor cleaner.*

Further disassembly of the air horn is not required for cleaning purposes. If part replacement is required, proceed as follows:

1. Remove staking on two choke valve attaching screws, then remove choke valve and shaft from air horn.
2. Air valves and air valve shaft should not be removed.
3. If it is necessary to replace the air valve closing spring or center plastic eccentric cam, a repair kit is available. Instructions for assembly are included in the repair kit.

Float Bowl

1. Remove air horn gasket by lifting out of dowel locating pins and lifting tab of gasket from beneath the power piston hanger, being careful not to distort springs holding the main metering rods (Fig. 8MQ).

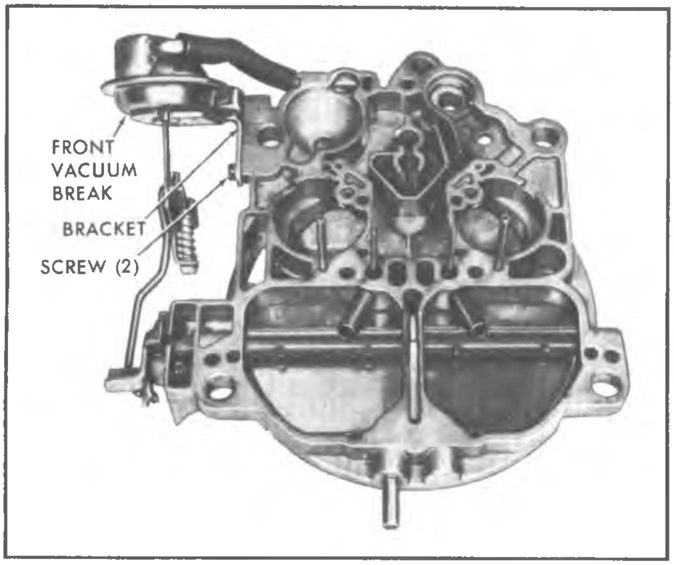


Fig. 7MQ—Removing Front Vacuum Break

2. Remove pump plunger from pump well.
3. Remove pump return spring from pump well.
4. Remove power piston and metering rods by depressing piston stem and allowing it to snap free (Fig. 9MQ).

   The power piston can be easily removed by pressing the piston down and releasing it with a snap. This will cause the power piston spring to snap the piston up against the retainer. This procedure may have to be repeated several times.

   CAUTION: *Do not remove power piston by using pliers on metering rod hanger.*

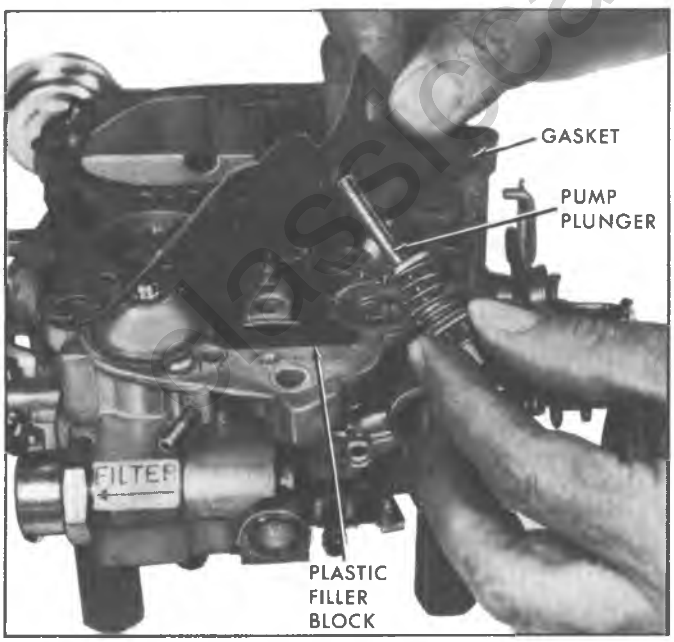


Fig. 8MQ—Removing Air Horn Gasket and Pump Plunger

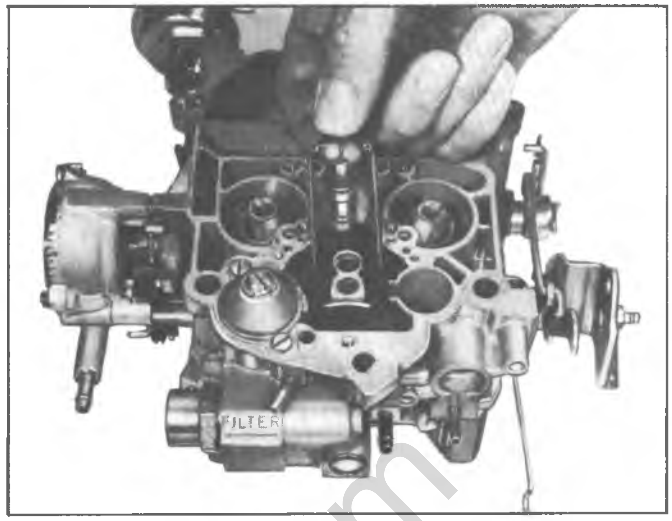


Fig. 9MQ—Removing Power Piston and Metering Rods

Remove the power piston spring from the well.

5. Remove metering rods from power piston by disconnecting tension spring from top of each rod, then rotate rod to remove from hanger (Fig. 10MQ).

   CAUTION: *Use care when disassembling rods to prevent distortion of tension spring and/or metering rods. Note carefully position of tension spring for later reassembly.*

6. Remove plastic filler block over float valve.
7. Remove float assembly and float needle by pulling up on retaining pin. Remove float needle seat and gasket. (Fig. 11MQ).

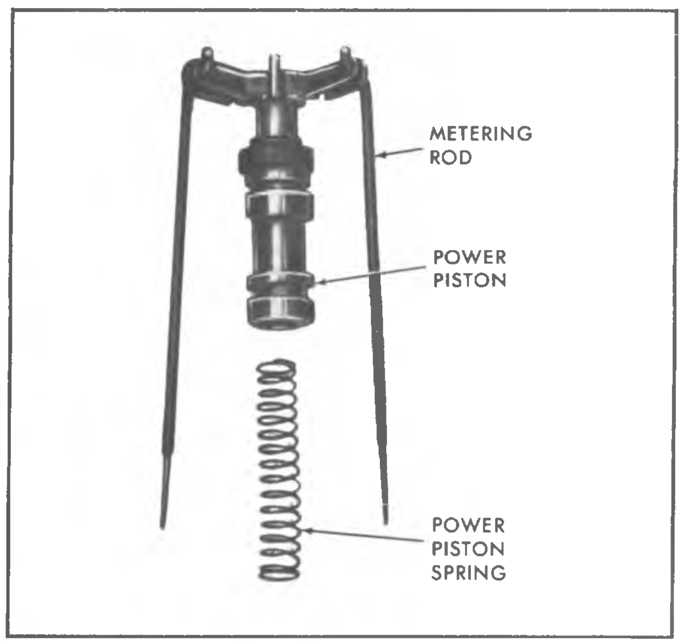


Fig. 10MQ—Power Piston and Metering Rods

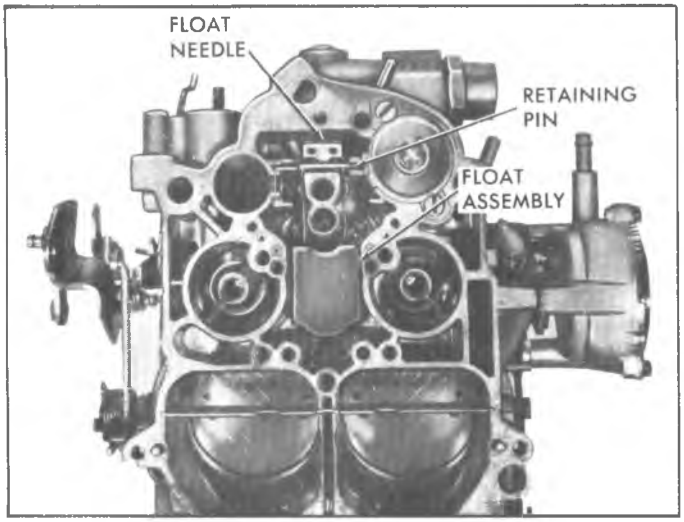


Fig. 11MQ—Float Assembly

8. Remove two cover screws and carefully lift the A.P.T. metering rod with filler spool, or aneroid, from the float bowl (Fig. 12MQ).

   CAUTION: *The A.P.T. metering rod with filler spool, or aneroid, is extremely fragile. Use care in handling. Do not immerse filler spool or aneroid in carburetor cleaner. The A.P.T. metering rod is pre-set at the factory and NO attempt should be made to re-adjust in the field. If replacement is necessary, see A.P.T. Metering Rod Replacement.*

9. Remove primary main metering jets (Fig. 13MQ).

   NOTE: No attempt should be made to remove the A.P.T. metering jet, or secondary metering orifice plates. These jets are fixed and, if damaged, float bowl replacement is required.

10. Remove pump discharge check ball retainer and check ball.

11. Remove hose from rear vacuum break control assembly. Remove two screws from rear vacuum break bracket and rotate the assembly to remove vacuum break rod from slot in plunger head (Fig. 14MQ).

   CAUTION: *Do not place vacuum break assembly in carburetor cleaner.*

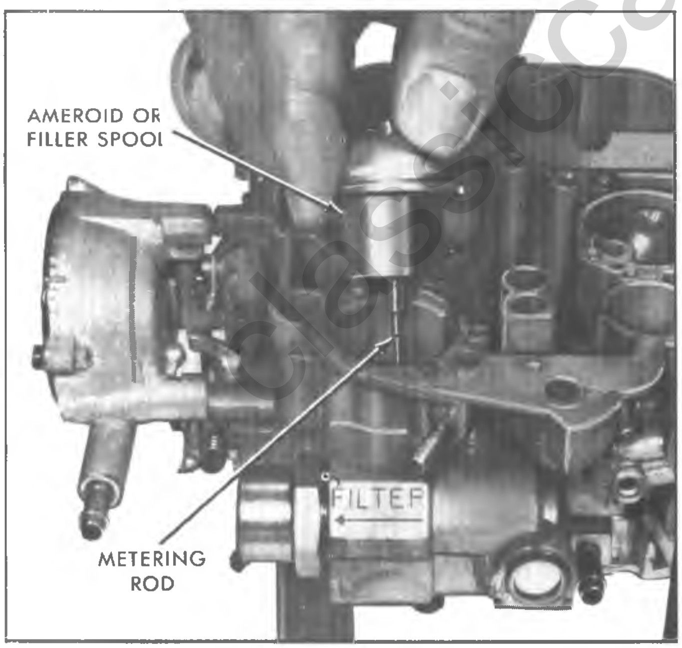


Fig. 12MQ—Removing A.P.T. Metering Rod or Aneroid

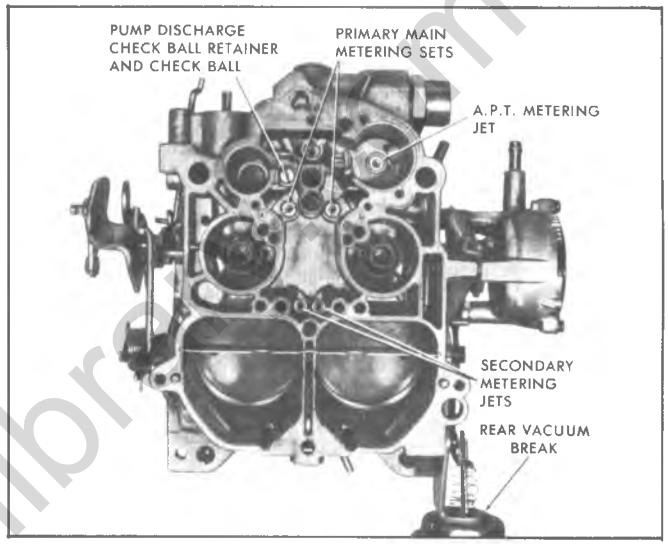


Fig. 13MQ—Float Bowl Jets

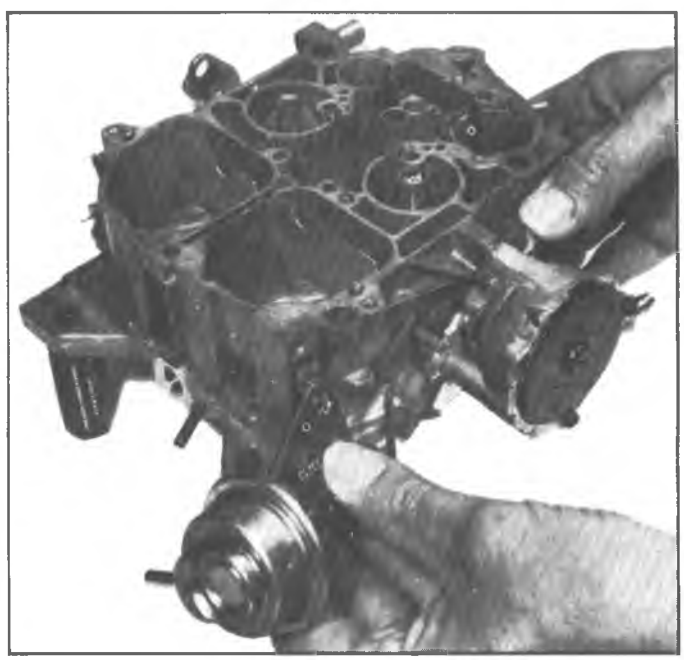


Fig. 14MQ—Rear Vacuum Break

12. Remove vacuum break rod by holding down on fast idle cam (hot idle position); move end of vacuum break rod away from float bowl; then disengage rod from hole in intermediate choke lever.

Choke

1. Remove three attaching screws and retainers from choke cover and coil assembly. Then pull straight outward and remove cover and coil assembly from choke housing. Remove choke cover gasket.

   It is not necessary to remove baffle plate from beneath the thermostatic coil. Distortion of the thermostatic coil may result if forced off the center retaining post on the choke cover.

2. Remove choke housing assembly from float bowl by removing retaining screw and washer inside the choke housing (Fig. 15MQ). The complete choke assembly can be removed from the float bowl by sliding outward.
3. Remove secondary throttle valve lock-out lever from float bowl. (Fig. 16MQ).
4. Remove lower choke lever from inside float bowl cavity by inverting bowl.
5. Remove plastic tube seal from choke housing (Fig. 16MQ).

   CAUTION: *Plastic tube seal should not be immersed in carburetor cleaner.*

6. To disassemble intermediate choke shaft from choke housing, remove coil lever retaining screw at end of shaft inside the choke housing (Fig. 15MQ). Then remove thermostatic coil lever from flats on intermediate choke shaft. Remove intermediate choke shaft from the choke housing by sliding outward. The fast idle cam can now be removed from the intermediate choke shaft (Fig. 16MQ).

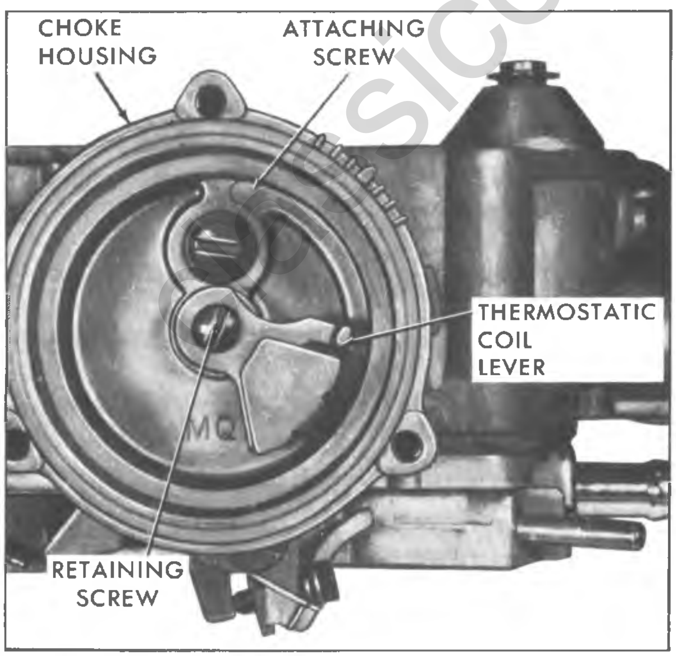


Fig. 15MQ—Removing Choke Housing

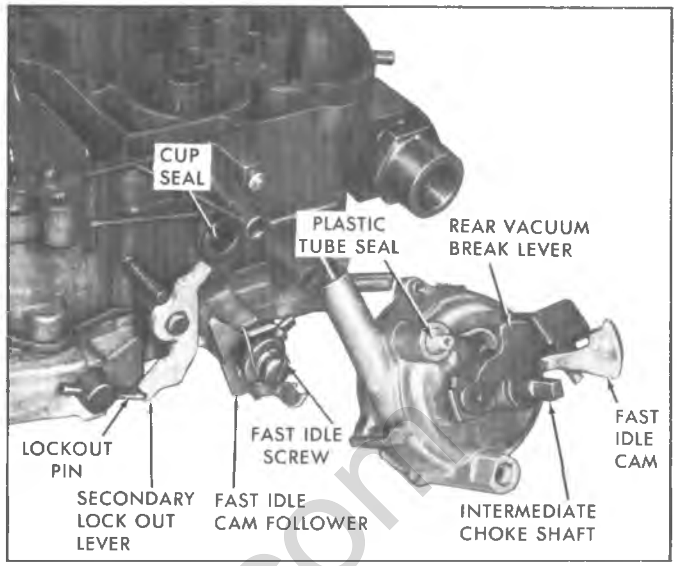


Fig. 16MQ—Choke Housing Assembly

CAUTION: *Remove the cup seal from inside choke housing shaft hole if the housing is to be immersed in carburetor cleaner. Also, remove the cup seal from the float bowl plastic insert for bowl cleaning purposes. DO NOT ATTEMPT TO REMOVE PLASTIC INSERT.*

Float Bowl Disassembly

1. Remove fuel inlet nut, gasket and filter (Fig. 17MQ).
2. Remove secondary air baffle, if replacement is required.
3. Remove pump well fill slot baffle, if replacement is required.
4. Remove throttle body by removing throttle body to bowl attaching screws (Fig. 18MQ).
5. Remove throttle body to bowl insulator gasket (Fig. 19MQ).

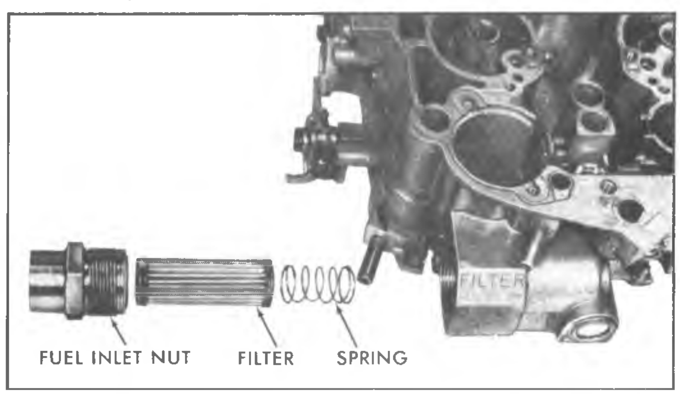


Fig. 17MQ—Fuel Filter

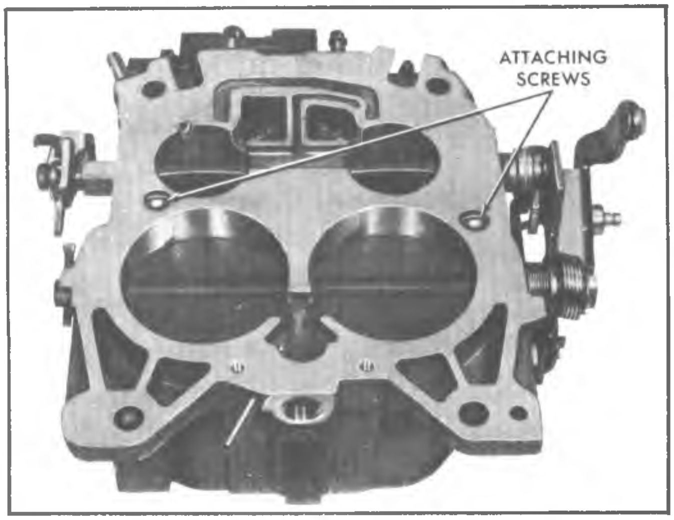


Fig. 18MQ—Removing Throttle Body

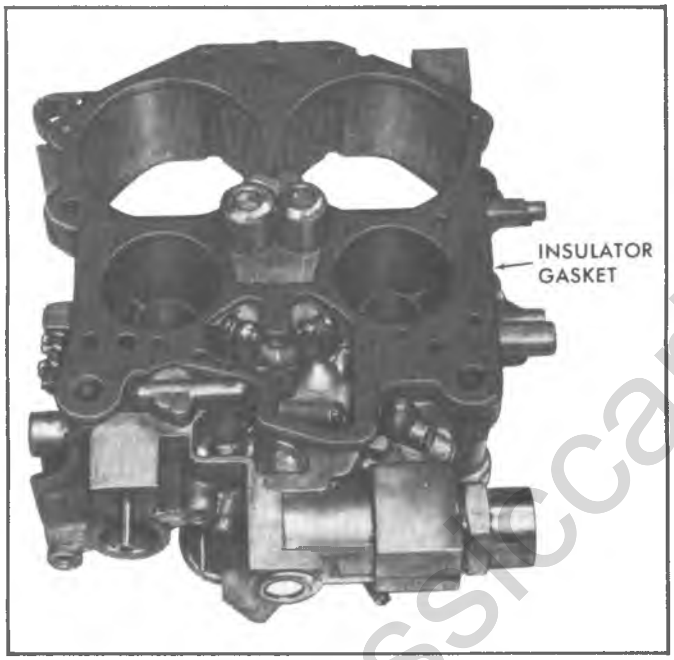


Fig. 19MQ—Removing Insulator Gasket

Throttle Body Disassembly

1. Remove pump rod from throttle lever.
2. DO NOT REMOVE idle mixture limiter caps, unless it is necessary to replace the mixture needles or normal soaking and air pressure fails to clean the idle passages. If the idle mixture needles are removed, refer to Service Section for adjustment procedure. If necessary to remove the idle mixture needle, destroy plastic limiter cap. Do not install a replacement cap as a bare mixture screw is sufficient to indicate that the mixture has been re-adjusted.

CLEANING AND INSPECTION

1. Thoroughly clean carburetor castings and metal parts in an approved carburetor cleaner, such as Carbon X(X-55) or its equivalent.

   CAUTION: *The idle stop solenoid, throttle stop vacuum unit, rubber parts, plastic parts, pump plungers, filler spools or aneroid, and choke vacuum breaks should not be immersed in carburetor cleaner. However, the throttle valve shafts will withstand normal cleaning in carburetor cleaner.*

2. Blow out all passages in castings with compressed air.

   CAUTION: *Do not pass drills through jets or passages.*

3. Examine float needle and seat for wear. Replace, if necessary, with new float needle and seat assembly.
4. Inspect upper and lower surfaces of carburetor castings for damage.
5. Inspect holes in levers for excessive wear or out of round conditions. If worn, levers should be replaced.
6. Examine fast idle cam for wear or damage.
7. Check air valve for binding conditions. If air valve is damaged, air horn assembly must be replaced.
8. Check all throttle levers and valves for binds or other damage.

ASSEMBLY

Throttle Body

1. If removed, install idle mixture needles and springs until seated. Back out the mixture needles 4 turns as a preliminary idle adjustment. Final adjustment must be made on the engine using the procedures described under slow idle adjustment.
2. Install lower end of pump rod in throttle lever by aligning tang on rod with slot in lever. End of rod should point outwards towards throttle lever.

Float Bowl Assembly

1. Install new throttle body to bowl gasket over two locating dowels on bowl.
2. Install throttle body making certain throttle body is properly located over dowels on float bowl, then install throttle body to bowl screws and tighten evenly and securely (Fig. 18MQ).
3. Place carburetor on proper holding fixture J-8328.
4. Install fuel inlet filter spring, filter, new gasket and inlet nut and tighten nut securely (18 ft. lbs.) (Fig. 17MQ).

   CAUTION: *Tightening beyond specified torque can damage nylon gasket.*

Choke

1. Install new cup seal into plastic insert on side of float bowl for intermediate choke shaft. Lip on cup seal faces outward.
2. Install secondary throttle valve lock-out lever on boss on float bowl with recess in hole in lever facing inward.
3. Install new cup seal into inside choke housing shaft hole. Lips on seal face inward, towards inside of housing.
4. Install fast idle cam onto the intermediate choke shaft (steps on fast idle cam face downward) (Fig. 16MQ).
5. Carefully install fast idle cam and intermediate choke shaft assembly through seal in choke housing; then install thermostatic coil lever onto flats on intermediate choke shaft. Inside thermostatic choke coil lever is properly aligned when both inside and outside levers face towards fuel inlet. Install inside lever retaining screw into end of intermediate choke shaft. Tighten securely.
6. Using Tool J-23417, install lower choke rod lever into cavity in float bowl. Install plastic tube seal into cavity on choke housing before assembling choke housing to bowl. Install choke housing to bowl sliding intermediate choke shaft into lower choke lever (Fig. 20MQ).

   NOTE: The intermediate choke shaft lever and fast idle cam are in correct relation when the tang on lever is beneath the fast idle cam. Do not install choke cover and coil assembly until inside coil lever is adjusted. Refer to Service Section for adjustment procedures.

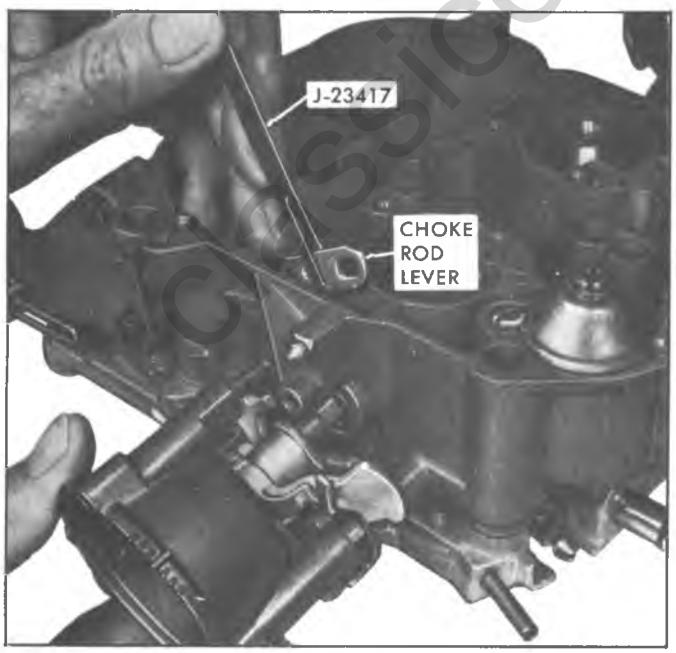


Fig. 20MQ—Installing Choke Rod Lever

Float Bowl

1. Holding down on fast idle cam (hot idle position), install end of vacuum break rod in hole in intermediate choke lever.
2. Install end of vacuum break rod in slot in rear vacuum break plunger head. Then install rear vacuum break control and bracket assembly to float bowl using two attaching screws (Fig. 14MQ). Tighten securely.

   NOTE: Do not attach vacuum break hose until after the vacuum break adjustment is complete. Refer to Service Section for adjustment procedure.

3. If removed, install air baffle in secondary side of float bowl with notches toward the top. Top edge of baffle must be flush with bowl casting.
4. If removed, install baffle in pump well fill slot.
5. Install pump discharge check ball and retainer in passage next to pump well. Tighten retainer securely.
6. Install primary main metering jets (Fig. 13MQ).
7. Carefully install A.P.T. metering rod and cover assembly into float bowl aligning tab on cover assembly with slot in float bowl closest to the fuel inlet nut (Fig. 12MQ). Use care installing the A.P.T. metering rod and cover assembly into float bowl to prevent damage to the filler spool, aneroid, or metering rod tip.

A.P.T. Metering Rod Replacement (Fig. 21MQ)

The position of the A.P.T. metering rod with filler spool or aneroid in the fixed jet is extremely critical. Adjustment should NEVER be attempted unless replacement of the A.P.T. metering rod assembly is required due to damage to the rod and filler spool, or failure of the original aneroid. The threaded A.P.T. metering rod assembly may be replaced as follows:

a. Note position of slot in adjusting screw of metering rod assembly and lightly scribe mark on cover.

b. With cover screws removed, carefully lift the metering rod and cover assembly from the float bowl.

CAUTION: *DO NOT immerse the filler spool or aneroid in carburetor cleaner. The metering rod assembly, with filler spool or aneroid, is extremely fragile. Use care in handling these critical parts.*

c. With metering rod and cover assembly held upright, using a small screwdriver, turn the adjusting screw counterclockwise, carefully counting the number of turns until the threaded metering rod assembly bottoms in the cover. Record number of turns counted for later reference (See Step "f" below).

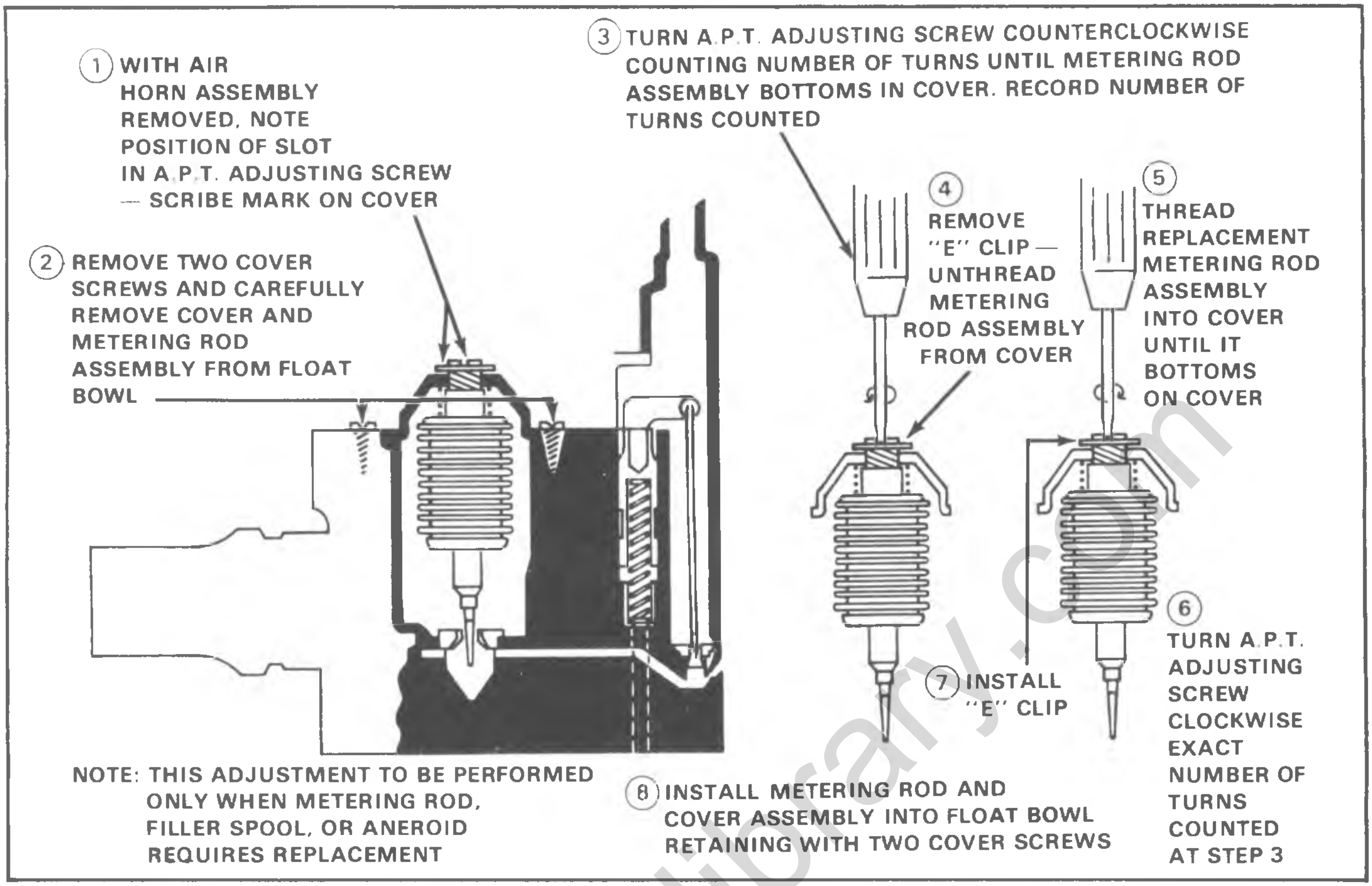


Fig. 21MQ—A.P.T. Metering Rod Replacement

d. Remove "E" clip retainer from threaded end of rod. Then using small screwdriver, turn slotted rod clockwise until rod assembly disengages from cover.

NOTE: Rod assembly is spring loaded. Use care in removing rod assembly from cover.

e. Install tension spring on the replacement metering rod assembly and thread rod and spring assembly into cover until the rod assembly bottoms in cover.

f. Using a small screwdriver, turn the adjusting screw clockwise until the rod is backed out of the cover exactly the same number of turns from scribe line as recorded during disassembly. (See Step c. above).

NOTE: When properly adjusted as above, slot in replacement A.P.T. metering rod assembly may not line up with scribe mark on cover.

g. Install "E" clip in groove in rod assembly, making sure clip is locked securely in place.

h. Carefully install cover and metering rod assembly onto float bowl aligning tab on cover assembly with slot in float bowl closest to the fuel inlet nut.

NOTE: Use care installing the metering rod and cover assembly into float bowl to prevent damaging or bending the metering rod tip.

i. Install cover attaching screws and tighten securely.

8. Install new needle seat assembly, with gasket.

9. To make adjustment easier, bend float arm upward at notch in arm before assembly.

Install float by sliding float lever under pull clip from front to back. With float lever in pull clip, hold float assembly at toe and install retaining pin from A.P.T. metering side.

CAUTION: *Do not install float needle pull clip into holes in float arm.*

10. Adjust float level.

Float Level (Fig. 22MQ)

a. Hold float retainer firmly in place.

b. Push float down lightly against needle.

c. With adjustable T-scale, gauge from top of float bowl casting (air horn gasket removed) to top of float at toe (gauging point 1/16" back from toe).

d. Bend float arm as necessary for proper adjustment by pushing on pontoon. Refer to adjustment chart for specification.

e. Visually check float alignment after adjustment.

11. Install plastic filler block over float needle, pressing downward until properly seated.

12. Install power piston spring in power piston well. If main metering rods were removed from hanger, reinstall making sure tension spring is connected to top of each rod (Fig. 9MQ). Install power piston assembly in well with metering rods properly positioned in metering jets. Press down firmly on plastic power piston retainer to make sure the retainer is seated in recess in bowl and the top is flush with the top of the bowl casting. If necessary, using a drift punch and small hammer, tap retainer lightly in place.

13. Install pump return spring in pump well.

14. Install air horn gasket by carefully sliding tab of gasket around main metering rods and beneath the power piston hanger. Position gasket over the two dowel pins on the float bowl.

15. Carefully lift one corner of the air horn gasket and install pump plunger in the pump well by pushing the plunger to the bottom of the well against return spring tension. While holding in this position, align pump plunger stem with hole in gasket and press gasket in place.

Air Horn

1. If removed, install choke shaft, choke valve, and two attaching screws. Tighten screws securely and stake lightly in place.

2. Check choke valve for freedom of movement and proper alignment before staking screws in place.

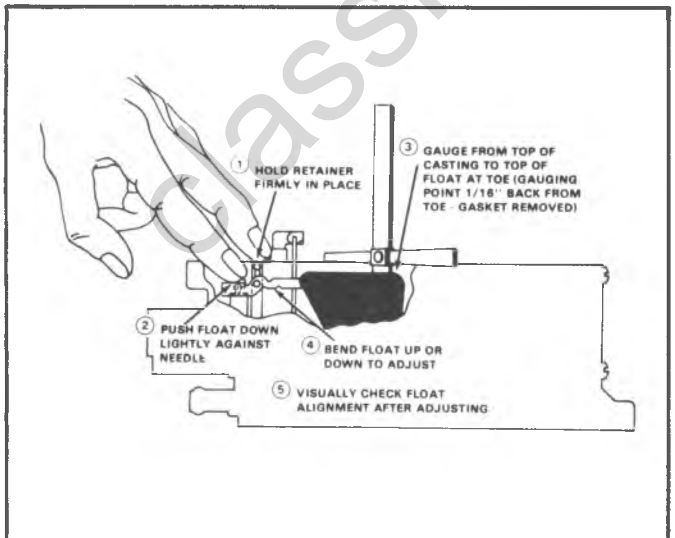


Fig. 22MQ—Float Level Adjustment

Air Horn to Bowl Installation

1. Holding down on air horn gasket at pump plunger location, carefully lower air horn assembly onto float bowl making sure that the bleed tubes, accelerating well tubes, pull-over enrichment tubes (if used), and pump plunger stem are positioned properly through the holes in the air horn gasket.

   CAUTION: *Do not force the air horn assembly onto the bowl but rather lightly lower in place.*

2. Install two long air horn screws, five short screws, and two coutersunk screws into primary venturi area.

   NOTE: If used, install secondary air baffle beneath two center air horn screws. All air horn screws must be tightened evenly and securely. See Figure 5MQ for proper tightening sequence.

3. Install vacuum break diaphragm rod into the slot in lever on the end of the air valve shaft. Then install the other end of rod into hole in the front vacuum break diaphragm plunger. Install front vacuum break control and bracket assembly to air horn using two retaining screws through the bracket. Tighten screws securely.

   NOTE: Do not attach vacuum break hose until vacuum break adjustment is completed. Refer to Service Section for adjustment procedure.

4. Connect upper end of pump rod to pump lever by placing rod in specified hole in lever. Align hole in pump lever with hole in air horn casting using J-25322. Using small screwdriver, push pump lever roll pin back through casting until end of pin is flush with casting bosses in air horn.

   CAUTION: *Use care installing the small roll pin to prevent damage to pump lever casting bosses.*

5. Install two secondary metering rods into the secondary metering rod hanger (upper end of rods point toward each other). Install secondary metering rod holder, with rods, onto air valve cam follower. Install retaining screw end tighten securely. Work air valves up and down several times to make sure they are free in all positions.

6. Connect check rod into lower choke lever inside bowl cavity; they install choke rod into slot in upper choke lever and retain the choke lever to the end of the choke shaft with attaching screw. Tighten securely.

Make sure that the flats on the end of the choke shaft align with flats in the choke lever.

The front and rear vacuum break units, fast idle cam (choke rod), and inside thermostatic choke coil lever must be adjusted properly before installing the choke thermostatic coil and cover assembly and gasket. Refer to the Adjustment Procedures, in Service Section.

7. After the vacuum break, fast idle cam, and inside thermostatic coil lever are adjusted, the thermostatic coil and cover assembly and gasket should be installed and the cover assembly rotated until the choke valve just closes.

   On all models (except 454 V8), tang on thermostatic coil must be installed in slot in inside choke coil lever pick-up arm. At this point, the index cover should be adjusted as shown on adjustment chart.

   Install three choke cover retainers and screws and tighten securely.

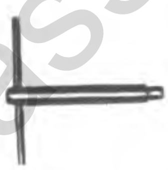
8. If used, position and retain idle stop solenoid and bracket assembly or decel throttle stop vacuum assembly.

SPECIAL TOOLS

J-22973 THER-MAC THERMOMETOR

J-8328 CARBURETOR HOLDING TOOL
(Set of 4)

J-9789-01 UNIVERSAL CARBURETOR
GAUGE SET



J-5197 BENDING TOOL

J-25322 PUMP LEVER PIN
DRIVE PUNCH

J-23417 CHOKE LEVER
INSTALLING TOOL

Fig. 1ST—Special Tools

SECTION 6Y

ENGINE ELECTRICAL

NOTE: Except for the following changes, all information listed in Section 6Y of the 1974 Light Duty Truck Overhaul Manual is applicable to 1975 light duty trucks. Refer to 1974 Passenger Cars and Light Duty Truck Overhaul Manual for any overhaul procedure not contained herein.

STARTING MOTOR

The 1975 starter is mostly carryover from 1974. The only difference being that the "R" terminal of the starter solenoid has been removed. This terminal was removed because with the High Energy Ignition System there is no longer any requirement for the electrical lead from the starter solenoid to the ignition coil. Refer to Section 6Y of the 1974 Passenger Car and Truck Overhaul Manual for all overhaul procedures.

10-SI SERIES 100 TYPE GENERATOR

The 1975 10-SI generator is mostly carryover from 1974. The only difference being that a 40-ohm resistor has been added to the warning and indicator circuit (see Section 6Y in service section of this manual). The purpose of this resistor is to provide a definite warning indicator light in the case of an open field circuit in the generator. Refer to Section 6Y of the 1974 Passenger Car and Truck Overhaul Manual for all overhaul procedures.

STARTING SOLENOID

The 1975 starter solenoid is mostly carryover from 1974. The only difference being that the "R" terminal of the solenoid has been removed. This terminal was removed because with the High Energy Ignition System there is no longer any requirement for the electrical lead from the starter solenoid to the ignition coil. Refer to Section 6Y of the 1974 Passenger Car and Truck Overhaul Manual for all overhaul procedures.

SECTION 7A

AUTOMATIC TRANSMISSION

CONTENTS OF THIS SECTION

TURBO HYDRA-MATIC 350 TRANSMISSION

INDEX

DISASSEMBLY

1. Install Holding Fixture J-8763-02 on transmission and place into Holding Tool base J-3289-20 with converter facing upward.

   NOTE: Cleanliness is an important factor in the overhaul of the transmission. Before attempting any disassembly operation, the exterior of the case should be thoroughly cleaned to prevent the possibility of dirt entering the transmission internal mechanism. During disassembly, all parts should be thoroughly cleaned in cleaning fluid and then air dried. Wiping cloths or rags should not be used to dry parts.

   CAUTION: *Do not use solvents which could damage rubber seals or clutch facings.*

2. With transmission in holding fixture remove torque converter assembly.
3. Remove vacuum modulator assembly attaching bolt and retainer.
4. Remove vacuum modulator assembly, "O" ring seal, and modulator valve from case (fig. 1A). Discard "O" ring.

INSPECTION OF CONVERTER

1. Check converter for leaks as follows (fig. 3A):
   a. Install Tool J-21369 and tighten.
   b. Apply 80 psi air pressure to tool.
   c. Submerge in water and check for leaks.
2. Check converter hub surfaces for signs of scoring or wear.

CONVERTER END CLEARANCE CHECK (FIGS. 4A and 5A)

1. Fully release collet end of Tool J-21371-8.
2. Install collet end of Tool J-21371-8 into converter hub until it bottoms; then tighten cap nut to 5ft. lbs. (fig. 4A).
3. Install Tool J-21371-3 and tighten hex nut to 3 ft. lbs. (fig. 5A).
4. Install Dial Indicator J-8001 and set it at "zero", while its plunger rests on the cap nut of Tool J-21371-8.
5. Loosen hex nut while holding cap nut stationary. With the hex nut loosened and holding Tool J-21371-3 firmly against the converter hub, the reading obtained on the dial indicator will be the converter end clearance. End clearance should be less than .050". If the end clearance is .050" or greater, the converter must be replaced.

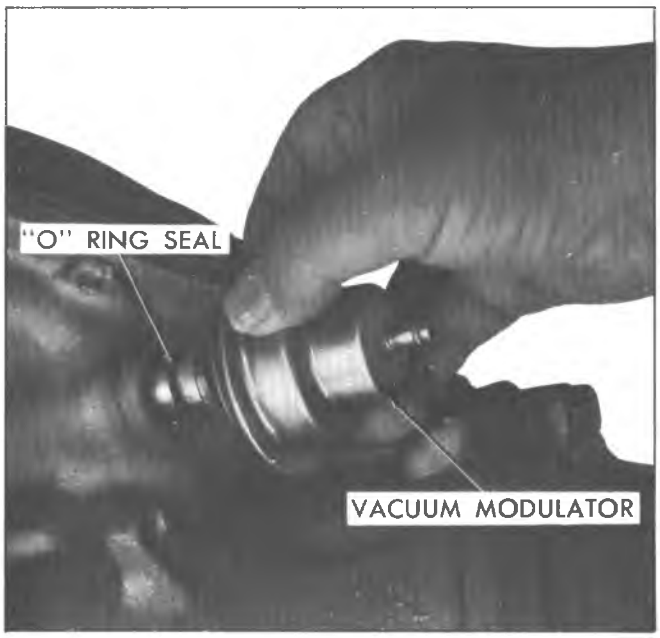


Fig. 1A—Removing Vacuum modulator Assembly

CLUTCH ASSEMBLIES FOR THM 350

CLUTCH	DRIVE PLATE	DRIVEN PLATES	CUSHION SPRING
FORWARD 250 L-6, 262 V-8	4	4	1
350 V-8, 400 V-8 TAXI AND TRUCK	5	5	1
INTERMEDIATE 250 L-6, 262 V-8	2	2	1
350 V-8, 400 V-8 TAXI AND TRUCK	3	3	1
DIRECT 250 L-6, 262 V-8	3	3	NONE
350 V-8, 400 V-8 TAXI AND TRUCK	4	4	NONE
REVERSE 250 L-6, 262 V-8	4	4	NONE
350 V-8, 400 V-8 TAXI AND TRUCK	5	5	NONE

Fig. 2A—Automatic Clutch Chart

Fig. 3A—Air Checking Converter

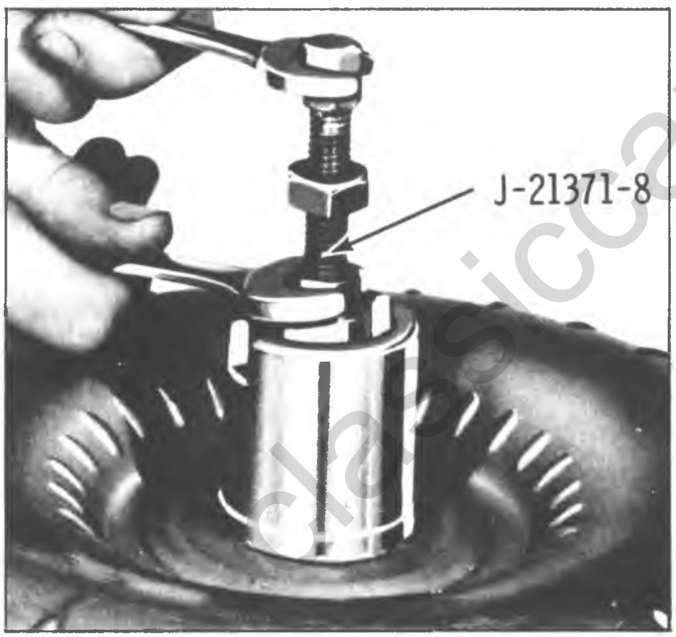


Fig. 4A—Loosening Collet on Tool J-21571-8

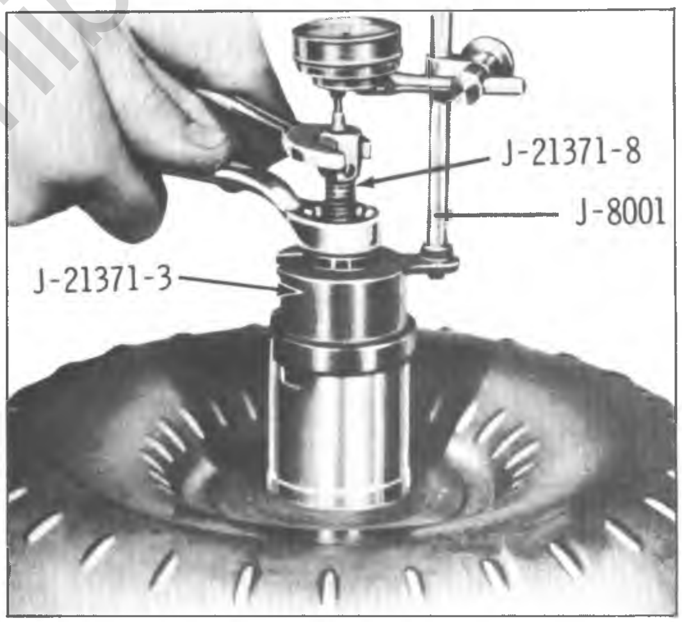


Fig. 5A—Checking Converter End Clearance

TURBO HYDRA-MATIC 375/400/475 TRANSMISSION

INDEX

REMOVAL OF REAR SERVO, VALVE BODY SPACER, GASKET AND FRONT SERVO

1. Remove rear servo cover attaching screws, servo cover and gasket. Discard gasket.
2. Remove rear servo assembly from case (fig. 1B).
3. Remove rear servo accumulator spring.
4. Make band apply pin selection check to determine possible cause of malfunction (fig. 2B and 3B).

   NOTE: There are six selective pins identified as shown in figure 3B. Selecting proper pin is equivalent to adjusting band.

   a. Attach band apply pin selection gauge (J-21370-9 and J-21370-6), to transmission case (lever pivot pin to rear) with rear servo cover attaching screws.

   b. Attach tool attaching screws finger tight and check freeness of selective pin. Torque attaching screws to 15 foot-pounds and recheck pin to make certain it does not bind.

   c. Apply 25 foot-pounds torque to the lever on Tool J-21370-6 (fig. 2B). Selection of the proper rear band apply pin is determined by the relation of the flat on Tool J-21370-9 to the flat machined area around the hole on Tool J-21370-6.

   d. Before removing gauging tool make note of the proper band apply pin to be used during assembly of the transmission as determined by the six selective pins identified as shown in figure 3B.

Rear Band Apply Pin Selection

a. Attach band apply pin selection Gauge J-21370-5 and J-21370-6 to transmission case with attaching screws checking to make certain the gauge pin does not bind in servo pin hole (fig. 2B).

b. Apply 25 ft. lb. torque and select proper pin to be used during assembly of transmission.

Selecting proper length pin is equivalent to adjusting band. The band lug end of each selective apply pin bears identification in the form of one, two or three rings (fig. 3B).

c. If both steps of J-21370-5 are below the gauge

Fig. 1B—Removing Rear Servo Assembly

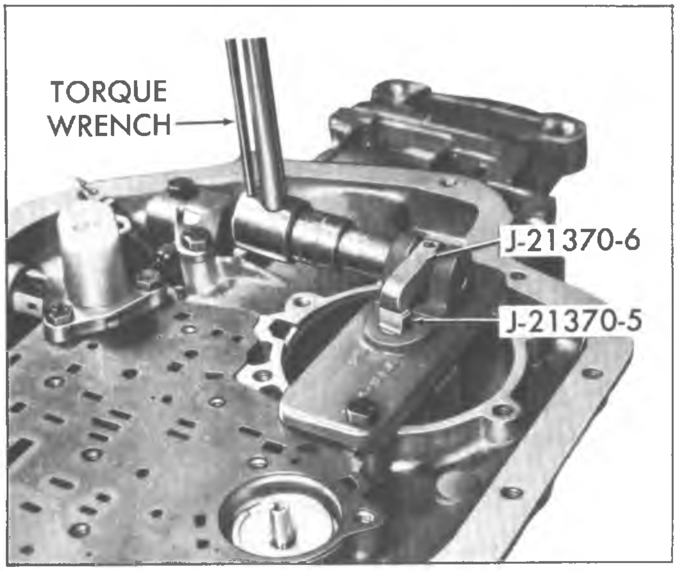


Fig. 2B—Checking Rear Band Apply Pin

surface, the long pin, identified by 3 rings, should be used.

d. If the gauge surface is between the steps, the medium pin, identified by 2 rings, should be used.

e. If both steps are above the gauge surface, the short pin, identified by 1 ring, should be used.

NOTE: If the transmission is in the vehicle, be careful when the detent solenoid is removed as it prevents the spacer plate and gasket and check balls from dropping down.

5. Remove detent solenoid attaching screws, detent solenoid and gasket.
6. Withdraw electrical connector and "O" ring seal.
7. Remove control valve assembly spacer plate and gasket.
8. Remove six (6) check balls from cored passages in transmission case.

   NOTE: Mark location of balls for aid in reassembly.

9. Remove front servo piston, retainer ring, washer, pin, spring retainer and spring from transmission case.

REMOVAL OF OIL PUMP AND INTERNAL CASE COMPONENTS

Delete step number 13 from removal procedure as found in 1974 Overhaul Manual.

SPEEDOMETER DRIVE GEAR REPLACEMENT

If removal and installation or replacement of the speedometer drive gear is necessary, proceed as follows:

Steel Speedometer Drive Gear

1. Install speedometer drive gear remover Tool J-21427-01 and J-9539 bolts with J-8105 or suitable

GAGING STEPS LOCATED ON THREE SIDES OF TOOL J-21370-9	PART NO.	PIN IDENTIFICATION
TOOL J-21370-9 — C LONGEST PIN	THIS STEP: USE PIN NO. 8627195	
	THIS STEP: SIDES B TO C USE PIN NO. 8627194	
B	THIS STEP: USE PIN NO. 8624141	
	THIS STEP: SIDES A TO B USE PIN NO. 8627193	
A	THIS STEP: USE PIN NO. 8624140	
LOWER STEP SHORTEST PIN	LOWER STEP: USE PIN NO. 8627192	
Note: The Identification Rings are .030" and .100" wide.		

Fig. 3B—Rear Band Apply Pin Identification puller on output shaft, and remove speedometer drive gear (fig. 4B).

2. Install new steel speedometer drive gear and drive to location (5-43/64" below end of output shaft for all models except CA, CB and CR) (11-15/64" below end of output shaft for models CA and CB) (11-29/64 below end of output shaft for model CR) using J-5590 (fig. 5B).

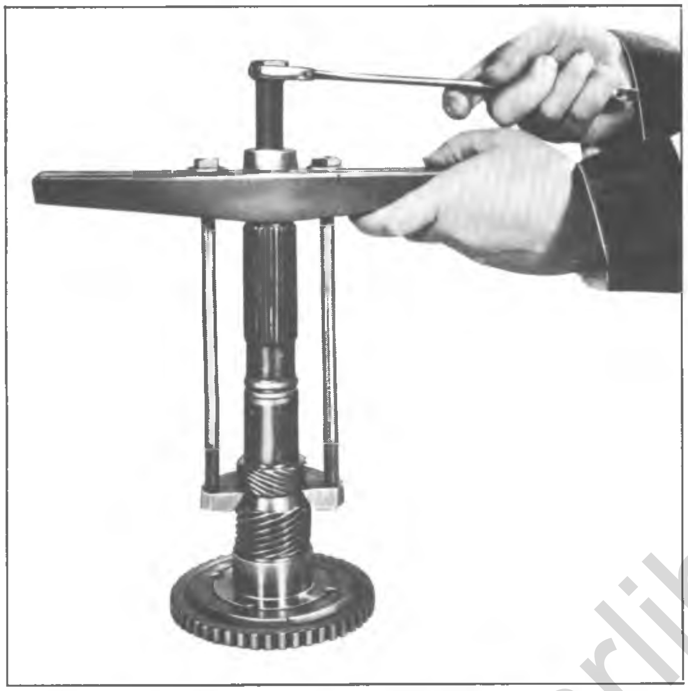


Fig. 4B—Removing Steel Speedometer Drive Gear

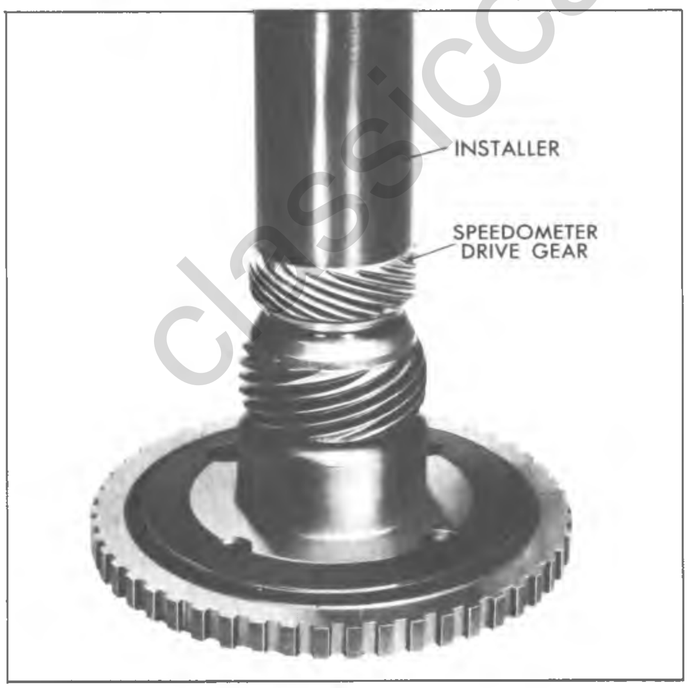


Fig. 5B—Installing Steel Speedometer Drive Gear

CONTROL VALVE, DISASSEMBLY, INSPECTION AND ASSEMBLY (Fig. 6B)

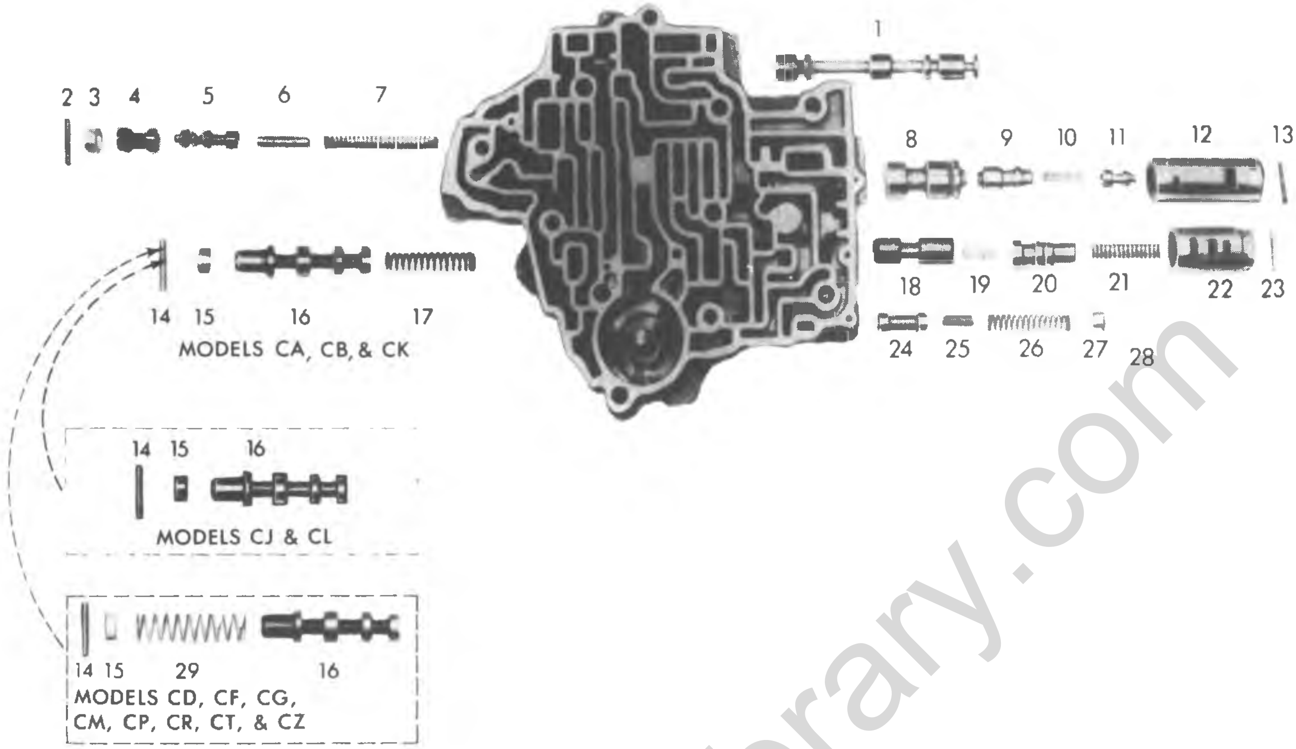
Disassembly

1. Position control valve assembly with cored face up and accumulator pocket nearest operator.
2. Remove manual valve from upper bore.
3. Install Special Tools J-22269 and J-24675, on accumulator piston and remove retaining ring (fig. 7B).
4. Remove front accumulator piston and spring (fig. 8B).
5. On the right side adjacent to the manual valve, remove the retaining pin, 1-2 modulator bushing, 1-2 regulator valve, 1-2 regulator spring 1-2 detent valve, and 1-2 shift valve.
6. From next bore down, remove retaining pin, 2-3 shift valve spring, 2-3 modulator valve bushing, 2-3 modulator valve, 3-2 intermediate spring, and 2-3 shift valve.
7. From next bore down remove retaining pin, bore plug, spring, spacer, and 3-2 valve.
8. At other end of assembly, tap bore, remove retaining pin and bore plug, detent valve, detent regulator valve, spring and spacer.
9. From the next bore down, remove the 1-2 accumulator valve train as follows:
   a. (Models CA, CB and CK) Remove the grooved retaining pin, bore plug, 1-2 accumulator valve and spring.
   b. (Models CJ and CL) Remove the grooved retaining pin, bore plug, 1-2 accumulator valve.
   c. (Models CD, CF, CP, CR, CT, CM and CZ) Remove the grooved retaining pin, bore plug, 1-2 accumulator secondary spring and 1-2 accumulator valve.

Inspection

NOTE: See figure 8B. Do not remove the teflon oil seal ring from the front accumulator piston unless the oil seal ring requires replacement. For service, the oil seal ring is cast iron.

1. Inspect all valves for scoring, cracks and free movement in their respective bores.
2. Inspect bushings for cracks, scratches or distortion.
3. Inspect body for cracks, or scored bores.
4. Check all springs for distortion or collapsed coils.
5. Inspect accumulator piston and oil seal ring for damage.



1. Manual Valve
2. Retaining Pin
3. Bore Plug
4. Detent Valve
5. Detent Regulator Valve
6. Spacer
7. Detent Regulator Valve Spring
8. 1-2 Shift Valve
9. 1-2 Detent Valve
10. 1-2 Regulator Valve Spring
11. 1-2 Regulator Valve
12. 1-2 Modulator Bushing
13. Retaining Pin
14. Retaining Pin
15. Bore Plug
16. 1-2 Accumulator Valve
17. 1-2 Primary Accumulator Spring
18. 2-3 Shift Valve
19. 3-2 Intermediate Spring
20. 2-3 Modulator Valve
21. 2-3 Shift Valve Spring
22. 2-3 Modulator Bushing
23. Retaining Pin
24. 3-2 Valve
25. Spacer
26. 3-2 Valve Spring
27. Bore Plug
28. Retaining Pin
29. 1-2 Accumulator Valve Sec. Spring

Fig. 6B—Control Valve Assembly - Exploded View

Assembly

1. Install front accumulator spring and piston into valve body.
2. Install Special Tools J-22269 and J-24675 and compress spring and piston and secure with retaining "E" ring.
3. Install the 1-2 accumulator valve train into the lower left hand bore as follows:
   a. (Model CA, CB and CK) Install the 1-2 accumulator spring and 1-2 accumulator valve, stem end out, into bore. Place the bore plug into valve bore and install grooved retaining pin from cast surface side of the valve body, with the groove entering the pin holes last. Tap pin with a hammer until flush with cast surface of valve body.
   b. (Models CJ and CL) Install 1-2 accumulator valve stem end out, into bore. Place bore plug into valve bore and install grooved retaining pin from cast surface side of the valve body, with the groove entering the pin holes last. Tap pin with a hammer until flush with cast surface.
   c. (Models CD, CP, CR, CT, CM and CZ) Install the 1-2 accumulator valve, stem end out, and 1-2 accumulator secondary spring. Install the bore plug and compress spring until grooved retaining pin can be inserted from the cast surface side of the valve body. Install retaining pin with the grooved end entering the pin hole last and

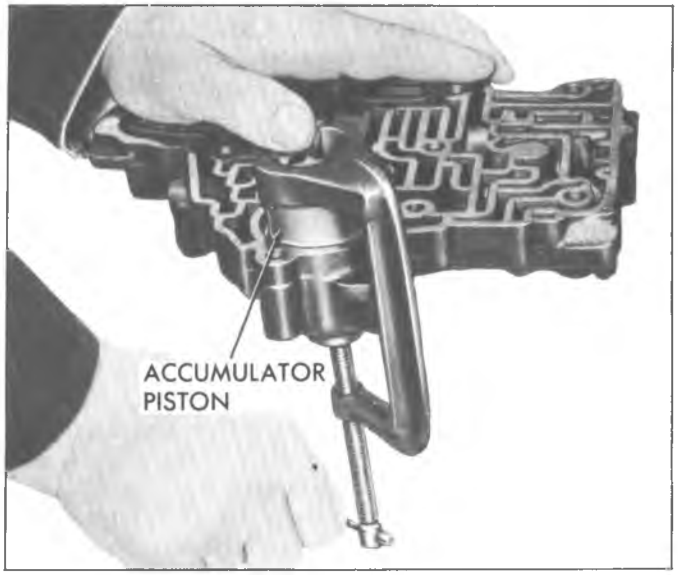


Fig. 7B—Installing Compressor Tool to Front Accumulator Piston

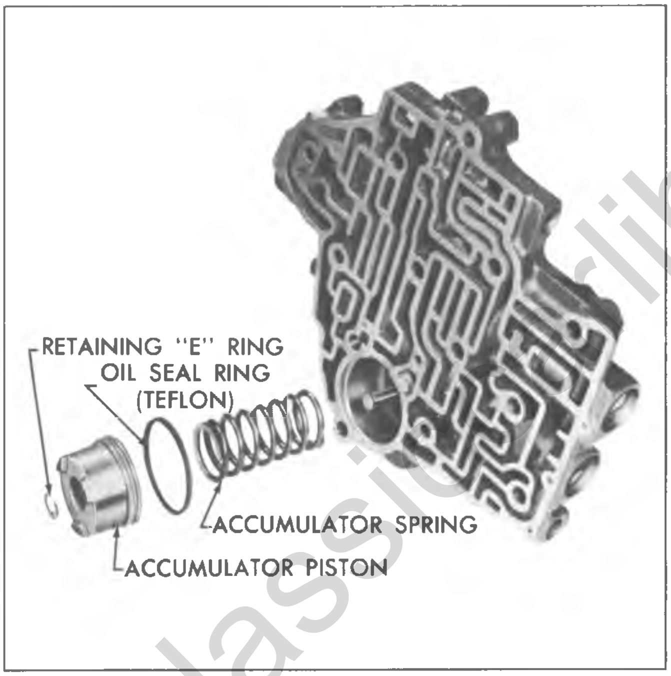


Fig. 8B—Front Accumulator Assembly - Exploded

tap in place until flush with cast surface of the valve body.

4. In next bore up, install detent spring and spacer. Compress spring and secure with small screwdriver (fig. 9B).
5. Install detent regulator valve, wide land first.
6. Install detent valve, narrow land first.
7. Install bore plug (hole out), depress spring by pressing in on plug, install retaining pin, and remove screwdriver.

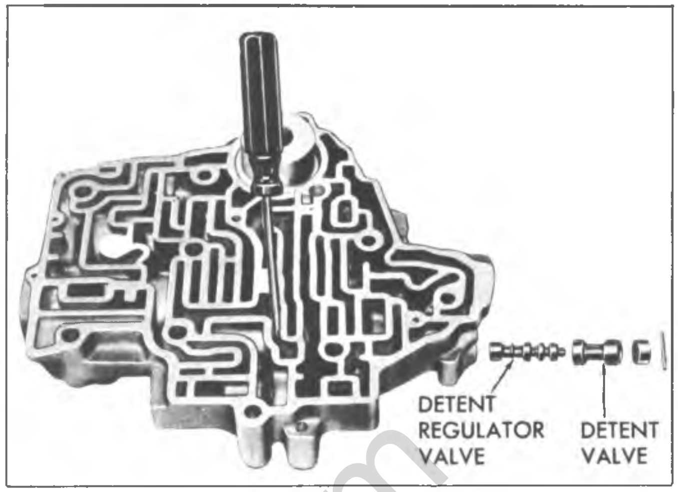


Fig. 9B—Installing Detent Regulator Valve and Detent Valve

8. In lower right hand bore, install 3-2 valve.
9. Install 3-2 spring, spacer, bore plug (hole out) and retaining pin.
10. In next bore up, install the 2-3 shift valve, open end out, into the bore and install 3-2 intermediate spring.
11. Install 2-3 modulator valve into 2-3 accumulator bushing and install both parts into valve body bore.
12. Install 2-3 valve spring and retaining pin.
13. In next bore up, install 1-2 valve, stem end out.
14. Install the 1-2 regulator valve, large stem first, regulator spring, and 1-2 detent valve open hole first into the 1-2 modulator bushing, aligning the spring in the bore of the detent valve. Install the parts in the valve body bore.
15. Compress bushing against spring and install retaining pin.
16. Install manual valve with detent pin groove to the right.

FORWARD CLUTCH DISASSEMBLY, INSPECTION AND ASSEMBLY

The procedure for disassembly, inspection, and assembly remains the same with the exception of these changes:

Disassembly procedure, step number 4, should read:

4a. (Models CA and CB) Remove four (4) radial grooved composition-faced, three (3) thin (.0775") flat steel and one (1) waved steel clutch plates from forward clutch housing.

b. (Models CJ, CK, CM, CP, CT and CZ) Remove five (5) radial grooved composition-faced, four (4) thin (.0775") flat steel and one (1) waved steel clutch plates from the forward clutch housing.

c. (Models CD, CF and CR) Remove five (5) radial grooved composition- faced, four (4) thick (.0915") flat steel and one (1) waved steel clutch plates from forward clutch housing.

d. (Model CL) Remove five (5) radial grooved composition-faced and five (5) thick (.0915") flat steel clutch plates.

NOTE: The production built transmissions now use a direct clutch piston without a check ball. The forward and direct clutch pistons look almost the same. Make sure the forward clutch piston is identified during disassembly so it will be reassembled into the forward clutch housing.

NOTE: The production built forward clutch piston will be aluminum or stamped steel.

Assembly procedure, step number 10 should read:

10. Install forward clutch plates.

a. (Models CA and CB) Install one (1) waved steel (plate with "U" notch), four (4) composition and three (3) thin (.0775") flat steel clutch plates, starting with waved plate and alternating composition-faced and steel clutch plates.

b. (Models CJ, CK, CM, CP, CT and CZ) Install one (1) waved steel (plate with "U" notch), five (5) composition-faced and four (4) thin (.0775") flat steel clutch plates, starting with waved plate and alternating composition-faced and steel clutch plates.

c. (Models CD, CF and CR) Install one (1) waved steel (plate with "U" notch), five (5) composition and four (4) thick (.0915") flat steel clutch plates, starting with waved plate and alternating composition-faced and steel clutch plates.

d. (Model CL) Install five (5) thick (.0915") flat steel and five (5) composition-faced clutch plates, starting with flat steel and alternating composition-faced and flat steel clutch plates.

NOTE: The model "CL" forward clutch composition-faced plates are different from the other models. Refer to parts catalog book for correct usage.

DIRECT CLUTCH AND INTERMEDIATE CLUTCH, DISASSEMBLY, INSPECTION AND ASSEMBLY

The procedure for disassembly, inspection, and assembly remains the same with the exception of these changes or additions:

Disassembly procedure, step number 4 and 5 should read:

4. Remove direct clutch backing plate.

5a. (Models CA and CB) Remove four (4) composition-faced, and four (4) flat steel clutch plates from the direct clutch housing.

b. (Models CD, CF, CJ, CM, CP, CR and CT) Remove five (5) composition-faced and five (5) flat steel clutch plates from the direct clutch housing.

c. (Model CK) Remove five (5) composition-faced, four (4) flat steel and one (1) waved steel clutch plates from the direct clutch housing.

d. (Models CL and CZ) Remove six (6) composition-faced and six (6) flat steel clutch plates from the direct clutch housing.

NOTE: The production built transmissions now use a direct clutch piston without a check ball. The forward and direct clutch pistons look almost the same. Make sure the direct clutch piston is identified during disassembly so it will be reassembled into the direct clutch housing. The service replacement direct clutch piston contains a check ball. (Models CL and CZ contain 2 check balls.)

NOTE: The production built direct clutch piston will be aluminum or stamped steel.

Inspection procedure add steps number 6, 7 and 8 which will read:

6. Inspect clutch piston for cracks.

7. Inspect fourteen (14) release springs for collapsed coils or signs of distortion.

NOTE: The 14 direct clutch release springs are not serviced. If one or more of these springs require replacement, discard all of them and install the 16 service direct clutch release springs.

8. Inspect housing for free operation of check ball.

Assembly procedure, caution should read:

CAUTION: *The direct clutch housing for the CD, CF, CL and CZ models use the 6 plate clutch assembly.*

CAUTION: *Production built transmissions now use a direct clutch housing with a check ball (see Fig. 10B). If the housing requires replacement and the replacement housing does not contain a check ball, replace the direct clutch piston with the service piston which has a check ball (Models CL and CZ service piston has 2 check balls). EITHER THE DIRECT CLUTCH HOUSING AND/OR THE PISTON MUST CONTAIN A CHECK BALL(S).*

Assembly procedure, step number 5, should read:

5. Install fourteen (14) springs into piston leaving two pockets diametrically opposite with no springs.

Assembly procedure, step number 8, should read:

8. Install direct clutch plates.

a. (Models CA and CB) Oil and install four (4) composition-faced, and four (4) flat steel clutch plates starting with a flat steel plate and

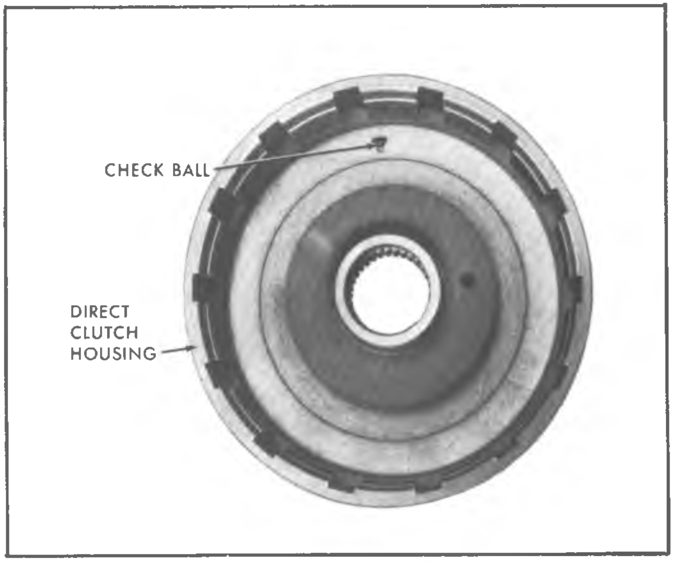


Fig. 10B—Direct Clutch Housing

alternating composition-faced and flat steel clutch plates.

b. (Models CD, CF, CJ, CM, CP, CR and CT) Oil and install five (5) composition-faced and five (5) flat steel clutch plates, starting with a flat steel plate and alternating composition-faced and flat steel clutch plates.

c. (Model CK) Oil and install five (5) composition-faced, four (4) flat steel and one (1) waved plate (plate with "U" notch), starting with waved plate and alternating composition-faced and flat steel clutch plates.

d. (Models CL and CZ) Oil and install six (6) composition-faced and six (6) flat steel clutch plates, starting with a flat steel plate and alternating composition-faced and flat steel clutch plates.

NOTE: All direct clutch flat steel clutch plates are the thick (.0915") type.

NOTE: The model "CL" direct clutch composition-faced lates are different from the other models. Refer to parts catalog book for correct usage.

Assembly procedure, Step number 11 should read:

11. Install the intermediate clutch outer race with a clockwise turning motion.

NOTE: Intermediate roller clutch is not released for the CL and CZ models. The sprag assembly is released for these models.

DISASSEMBLY, INSPECTION AND ASSEMBLY OF CENTER SUPPORT

The procedure for disassembly, inspection and assembly remains the same with the following exception:

Assembly procedure, Step number 7, should read:

7. Install four (4) oil seal rings on the center support.

NOTE: If Teflon rings are being re-used, make sure slit ends are assembled in same relation as cut. (Fig. 11B).

INSPECTION OF REACTION CARRIER, ROLLER CLUTCH, AND OUTPUT CARRIER ASSEMBLY

The procedure for inspection remains the same with the following addition:

Inspection procedure, step number 1, should read:

1. If the reaction carrier has a spacer ring in an undercut at the bottom of the roller cam ramps, inspect it for damage (Fig. 12B).

NOTE: The reaction carrier with the undercut and spacer ring is used optionally and interchangeably with the reaction carrier which does not have an undercut and spacer ring.

INSPECTION OF FRONT AND REAR BANDS, SUPPORT TO CASE SPACER

1. Inspect lining for cracks, flaking, burning, or looseness.
2. Inspect bands for cracks or distortion.
3. Inspect end for damage at anchor lugs or apply lugs.
4. Inspect support to case spacer for burrs or raised edges, if present remove with stone or fine abrasive.

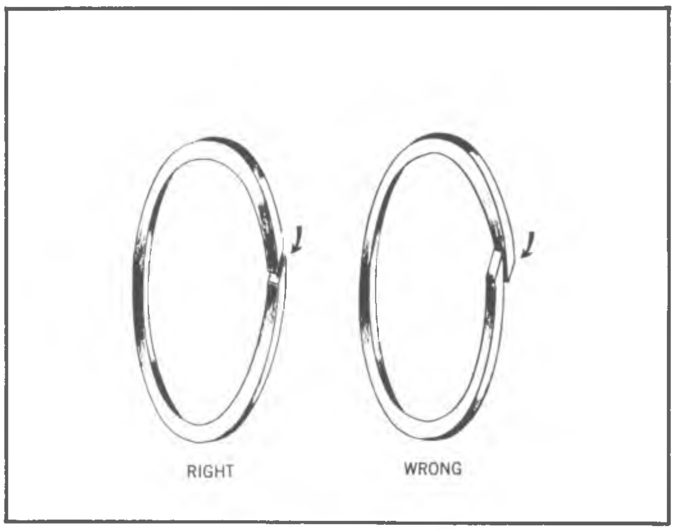


Fig. 11B—Teflon Rings

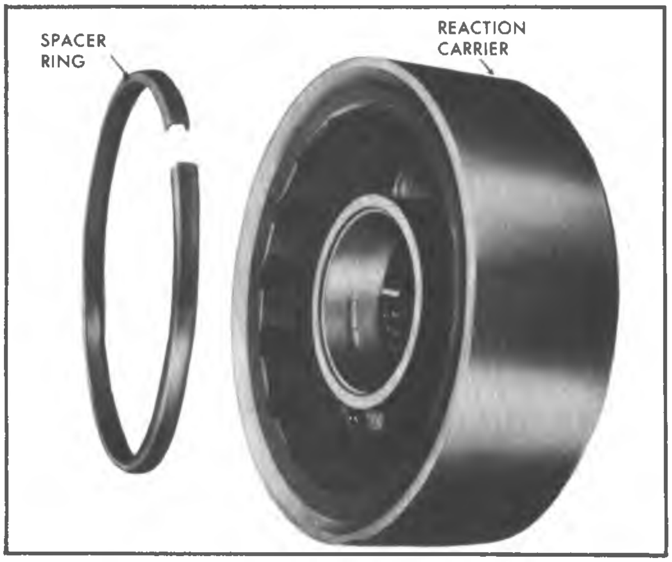


Fig. 12B—Inspecting Spacer Ring

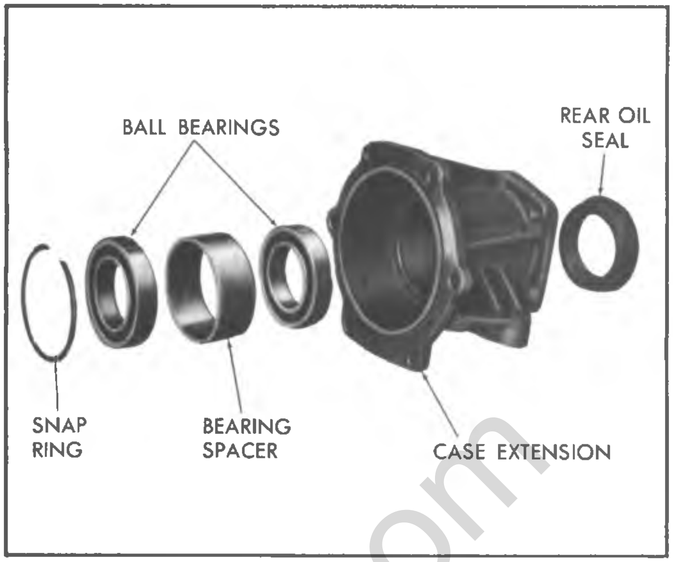


Fig. 13B—Model CL Case Extension

INSPECTION OF CASE EXTENSION (EXCEPT CL MODEL)

The procedure for inspection remains the same with the following exception:

Inspection procedure, Step number 1, should read:

1. Inspect bushing for excessive wear or damage. If replacement is necessary, remove rear seal and with extension housing properly supported, remove bushing as follows:
   a. (All except CA and CB Models) Using Tool J-21465-17 with Driver Handle J-8092, drive or press replacement bushing into place, flush to .010 below oil seal counter bore area. Stake bushing, using tool J-21465-10. Stake marks to be in bushing lubrication grooves.
   b. (CA and CB Models) Using Tool J-21424-9 with Driver Handle J-8092, drive or press replacement bushing into place flush to .010 below oil seal counter bore area. Stake bushing, using tool J-21465-10 (or J-8400-22). Stake marks to be in bushing lubrication grooves.

INSPECTION OF CASE EXTENSION—CL MODEL (FIG. 13B)

1. Inspect seal (case extension to case) groove for damage.
2. Inspect for cracks, or porosity.
3. Inspect dowel pin in rear face for damage.
4. Inspect oil seal for damage. If replacement is required, proceed as follows:
   a. Pry oil seal from extension.
   b. Apply non-hardening sealer to outside of new oil seal, and install oil seal into case extension using tool (J-24057).
5. Inspect ball bearing assemblies. If they are damaged, or if they require cleaning, proceed as follows:
   a. Remove rear seal.
   b. Remove snap ring.
   c. Remove ball bearings and bearing spacer, using a brass rod on the outside race of bearing. An arbor press can be used if tool to press bearing out is located on outer race of bearing.

   CAUTION: *DO NOT locate against inner race or balls.*

   d. Install ball bearing assembly and spacer, bearing first.
   e. Install ball bearing assembly and snap ring.
   f. Install new rear oil seal.

INSPECTION OF CASE ASSEMBLY

The procedure for inspection remains the same with the following addition:

Inspection procedure, step number 4 and 5 should read:

4. On model CL inspect studs for thread damage, and make sure they are tight.

   NOTE: The two (2) studs at 9 o'clock and 11 o'clock (when viewed from the rear of case and transmission in vehicle) are approximately 1/4" longer than the other four (4) studs. These two longer studs are required to accommodate the parking brake actuating cable bracket.

5. Inspect intermediate clutch driven plate lugs for damage or brinneling.

   NOTE: If the case assembly requires replacement, remove the nameplate from the old case and re-install it on the new case, using the truss head nameplate attaching screw that is serviced with the case.

ASSEMBLY OF REAR UNIT

The procedure for assembly remains the same with the following addition:

Assembly procedure, step number 11, should read:

11. Install reaction carrier to output carrier metal or non-metal thrust washer with tabs facing down in pockets of output carrier and retain with petrolatum.

    NOTE: The production built transmissions use a non-metal washer here. However, the service replacement washer is made of metal.

ASSEMBLY OF UNITS TO TRANSMISSION CASE

The procedure for assembly remains the same with the following exception:

Assembly procedure, Step number 12, should read:

12. Install intermediate clutch plates.
    a. (All models except CL and CZ) Lubricate with transmission oil two (2) flat steel and one (1) waved steel plates and three (3) composition-faced intermediate clutch plates and install, starting with waved steel plate and alternating composition-faced and flat steel plates (fig. 14B).
    b. (Models CL and CZ) Lubricate with transmission oil three (3) flat steel and three (3) composition-faced intermediate clutch plates and install, starting with flat steel and alternating composition-faced and flat steel plates (Fig. 14B).

    NOTE: The models CL and CZ intermediate composition-faced plates are different from the other models. Refer to parts catalog for correct usage.

CASE EXTENSION ASSEMBLY

1. Install new case extension housing to case gasket on extension housing. Model CL uses a seal between the extension housing and case extension.
2. Attach extension housing to case using attaching bolts and/or studs. Torque bolts to 20-25 ft. lbs.

   NOTE: Models CA, CB and CR use two (2) studs at 5 o'clock and 7 o'clock positions (when viewed from the rear of case and transmission in vehicle). Models CD and CF use two (2) studs at 3 o'clock and 5 o'clock positions. These studs are for the installation of the catalytic converter. Torque the studs to 20-25 ft. lbs.
3. If necessary, install a new seal as follows:

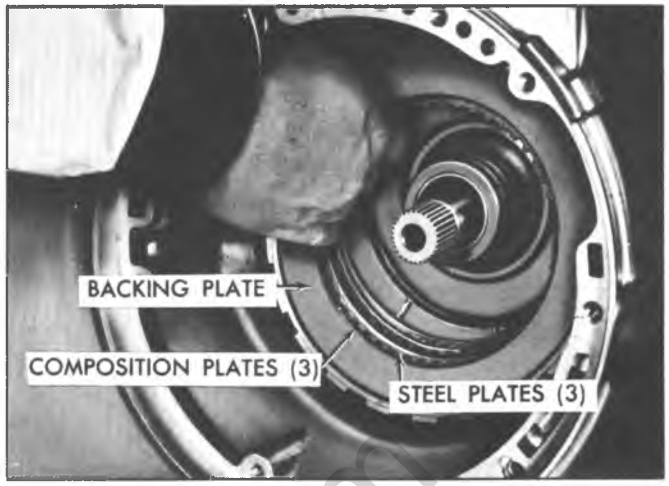


Fig. 14B—Installing Intermediate Backing Plate and Clutch Plates

a. (All except CA, CB and CL Models) use a non-hardening sealer on outside of seal body; and using Tool J-21359, drive seal in place (fig. 15B).
b. (Model CL) use a non-hardening sealer on outside of seal body; and using Tool J-24057 drive seal in place (fig. 15B).
c. (Model CA and CB) use a non-hardening sealer on outside of seal body; and using Tool J-21426, drive seal in place (fig. 15B).

Fig. 15B—Installing Extension Oil Seal (Typical)

INSTALLATION OF CHECK BALLS, CONTROL VALVE SPACER PLATE AND GASKET, DETENT SOLENOID, FRONT SERVO ASSEMBLY, AND ELECTRICAL CONNECTOR

The procedure for assembly remains the same with the following additions:

Assembly procedure, steps number 3 and 4 should read:

3. Install control valve spacer plate-to-case gasket (gasket with extension for detent solenoid and a "C" near front servo location).
4. Install control valve spacer plate and control valve to spacer plate gasket (gasket identified with a a "VB" near front servo).

INSTALLATION OF MODULATOR VALVE AND VACUUM MODULATOR

1. Install modulator valve into case, stem end out.
2. Install "O" ring seal on vacuum modulator.
3. Install vacuum modulator into case.

   NOTE: Models CA, CB and CK use a modulator that is different than the modulator used on the other models. Refer to parts catalog book for correct usage.
4. Install modulator retainer and attaching bolt. Torque bolt 18 ft. lbs.

INSTALLATION OF CONVERTER ASSEMBLY

With the transmission in cradle or portable jack, install the converter assembly into the pump assembly making certain that the converter hub drive slots are fully engaged with the pump drive gear tangs and the converter installed fully towards the rear of the transmission.

NOTE: The converter used in the CL, CM, CT, and CZ models has six (6) mounting lugs.

SECTION 7M

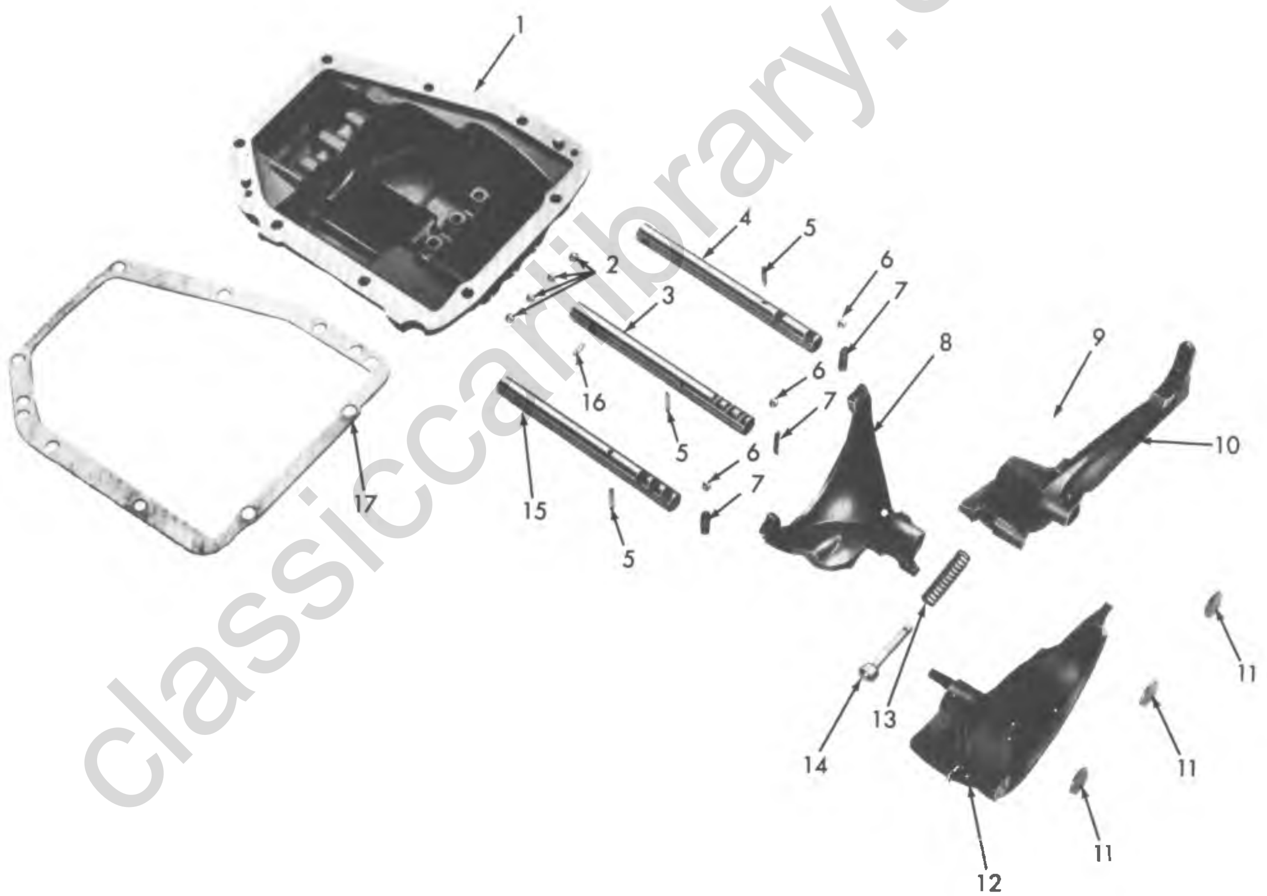
CLUTCH AND MANUAL TRANSMISSION

FOUR-SPEED MUNCIE TRANSMISSION (CH 465)

INDEX

ASSEMBLY (Fig. 1X)

1. In reassembling the transmission cover, care must be used in installing the shifter shafts. They should be installed in the order shown in Fig. 2X, namely, reverse 3rd-4th, and 1st-2nd. Figure 1X illustrates difference between shafts.
2. Place fork detent ball springs and balls in position in holes in cover.
3. Start shifter shafts into cover; depress detent balls with small punch and push shafts on over balls. (See Fig. 2X). Hold reverse fork in position and push shaft through yoke. Install split pin in fork and shaft; then, push fork in neutral position.



1. Transmission Cover
2. Interlock Balls
3. 3rd-4th Shifter Shaft
4. Reverse Shifter Shaft
5. Fork Retaining Pin
6. Detent Ball
7. Detent Spring
8. 3rd-4th Shifter Fork
9. "C" Ring Lock Clip
10. Reverse Shifter Fork
11. Shifter Shaft Hole Plugs
12. 1st-2nd Shifter Fork
13. Interlock Plunger Spring
14. Reverse Interlock Plunger
15. 1st-2nd Shifter Shaft
16. Interlock Pin
17. Cover Gasket

Fig. 1X—Cover Assembly Exploded View

4. Hold 3rd and 4th fork in position and push shaft through yoke, but not through front support bore.
5. Place two (2) interlock balls in cross-bore in front support boss between reverse and 3rd and 4th shifter shaft. Install the interlock pin in the 3rd and 4th shifter shaft hole and grease to hold in place. Push 3rd and 4th shaft through fork and cover bore keeping both balls and pin in position between shafts until retaining holes line up in fork and shaft. Install retaining pin and move to neutral position.
6. Place two (2) interlock balls between the 1st and 2nd shifter shaft and 3rd and 4th shifter shaft in the cross-bore of the front support boss. Hold 1st and 2nd fork in position and push shaft through cover bore in fork until retainer hole and fork line up with hole in shaft. Install retainer pin and move to neutral position.
7. Install new shifter shaft hole expansion plugs and expand in place.

MAINSHAFT ASSEMBLY

Disassembly (Fig. 3X)

1. Remove first speed gear and thrust washer.
2. Remove snap ring in front of 3rd-4th synchronizer assembly.
3. Remove reverse driven gear.
4. Press behind second speed gear to remove 3rd-4th synchronizer assembly, 3rd speed gear and 2nd speed gear along with 3rd speed gear bushing and thrust washer (fig. 4X).
5. Remove 2nd speed synchronizer ring.
6. Supporting 2nd speed synchronizer hub at front face, press mainshaft through removing 1st speed gear bushing and 2nd speed synchronizer hub.
7. Split 2nd speed gear bushing with chisel and remove bushing from shaft.

CAUTION: *Exercise care not to damage mainshaft.*

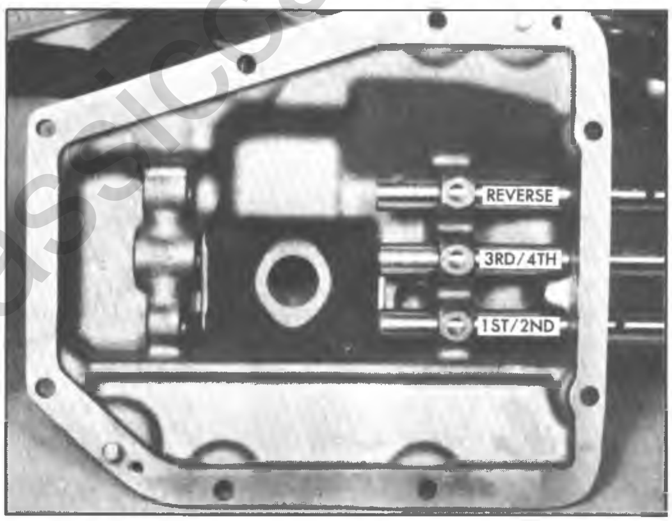
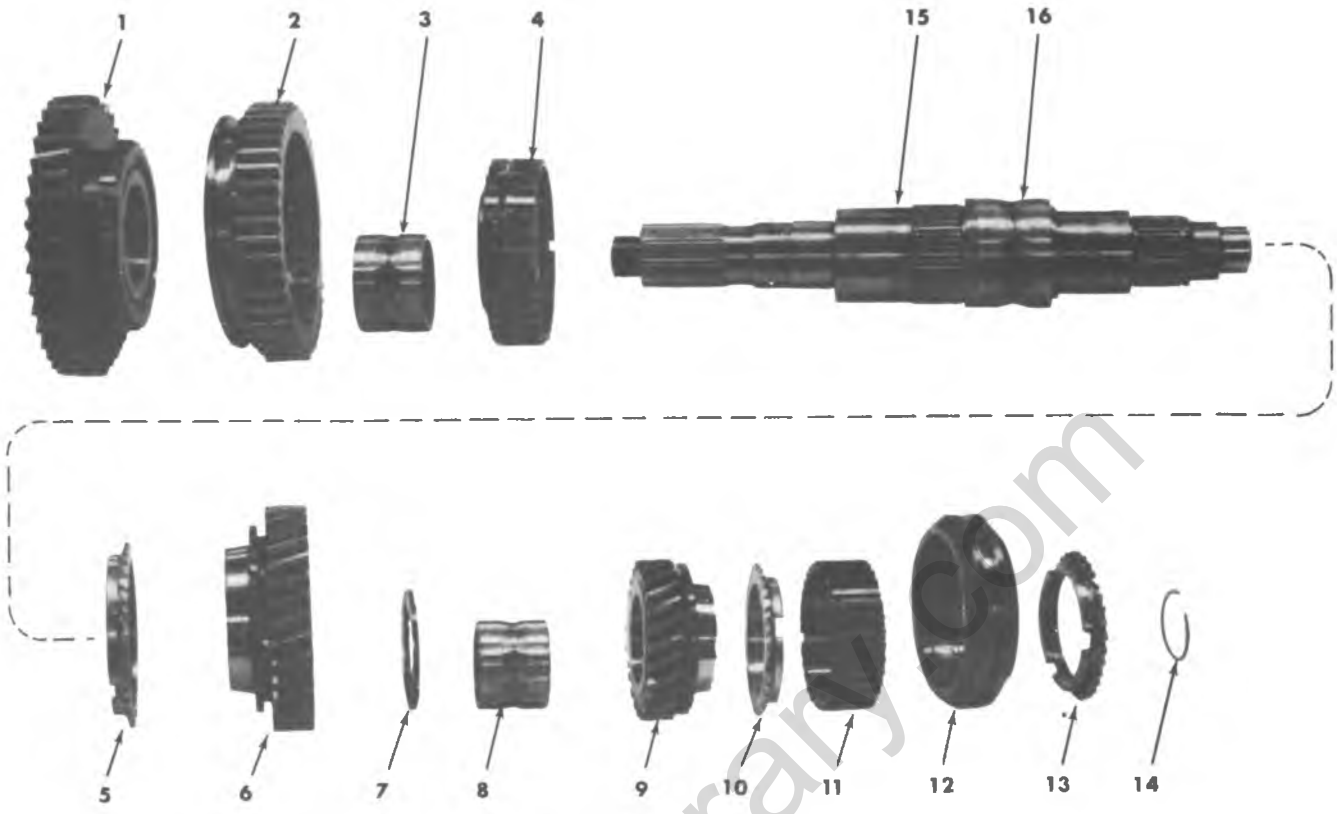


Fig. 2x–Shifter Shaft Installation



1. 1st Speed Gear
2. Reverse Driven Gear
3. 1st Gear Bushing
4. 1st-2nd Gear Synchronizer Hub Assembly
5. 2nd Speed Blocker Ring
6. 2nd Speed Gear
7. Thrust Washer
8. 3rd Speed Bushing
9. 3rd Speed Gear
10. 3rd Speed Blocker Ring
11. 3rd-4th Speed Synchronizer Hub Assembly
12. 3rd-4th Speed Synchronizer Sleeve
13. 4th Speed Blocker Ring
14. Snap Ring
15. Mainshaft
16. 2nd Speed Gear Bushing

Fig. 3X—Mainshaft Assembly Exploded View

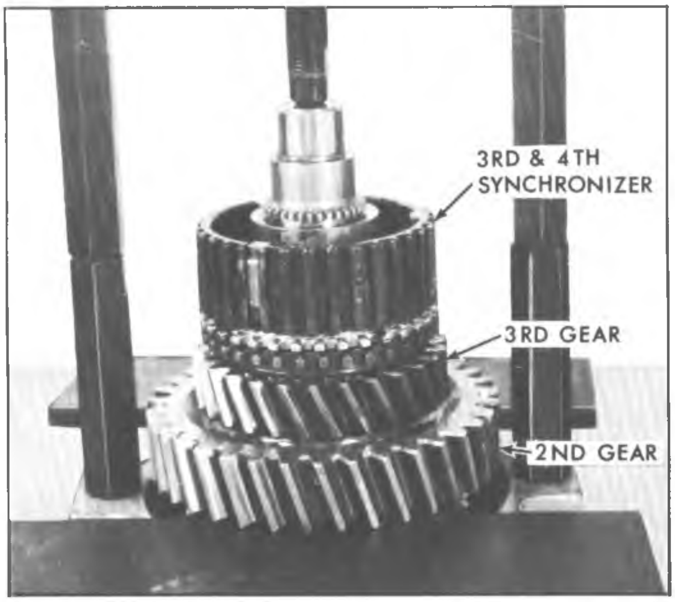


Fig. 4X—Disassembly of Mainshaft

NEW PROCESS TRANSFER CASE MODEL 203

INDEX

DISASSEMBLY OF TRANSFER CASE

Refer to figures 1F and 2F for cross sectional and exploded views of the transfer case.

1. Position transfer case on work bench or suitable work table (Fig. 3F and 4F).

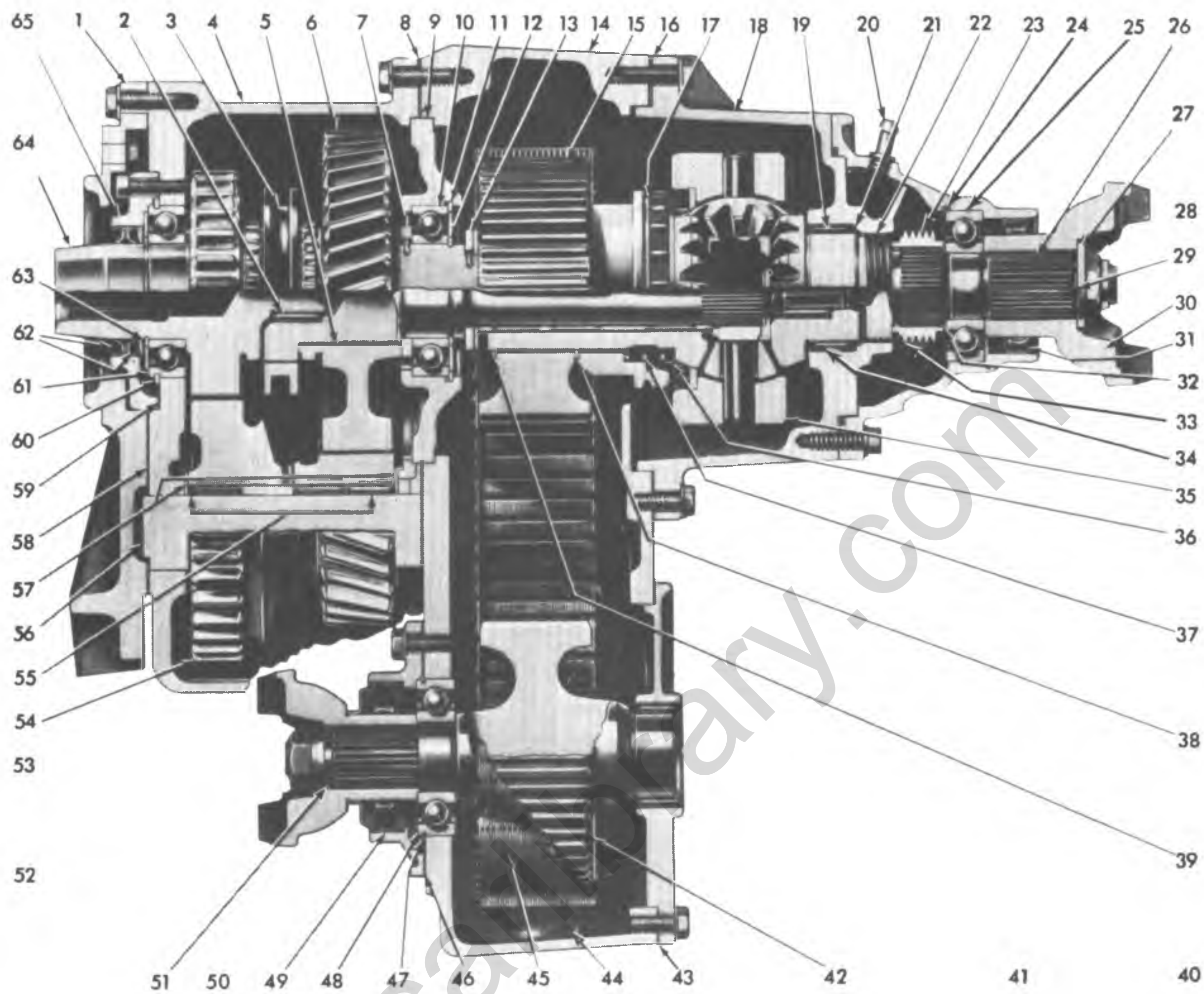
   NOTE: If lubricant was not drained from unit prior to removal from vehicle, remove front output rear cover and P.T.O. cover lower bolts and drain lubricant into waste container.

2. Using Tool J-8614-1, loosen rear output shaft flange retaining nut.
3. Using Tool J-8614-1, remove front output shaft flange retaining nut, washer and flange.

   NOTE: Tap dust shield rearward on shaft (away from bolts) to obtain clearance to remove bolts from flange and allow installation of Tool J-8614-1.

4. Remove bolts retaining front output shaft front bearing retainer. Remove bearing retainer and gasket from transfer case. Discard gasket.
5. Using a hoist or other suitable lifting tool, position assembly on blocks.
6. Remove bolts retaining rear section of rear output housing assembly from front section of rear output housing and disengage. Remove shims and speedometer gear from output shaft.
7. Remove bolts retaining front section of rear output housing assembly from transfer case. Remove housing from transfer case.
8. Remove "O" ring seal from front section of rear output housing and discard.
9. Disengage rear output shaft from differential carrier assembly.
10. Slide carrier unit from shaft.

    NOTE: A 1-1/2" to 2" water hose band type clamp may be installed on the input shaft at this time to prevent loosing bearings when removing input shaft assembly from the range box.



1. Adapter
2. Input Drive Gear Pilot Brgs.
3. Range Selector Sliding Clutch
4. Range Selector Housing
5. Low Speed Gear Bushing
6. Low Speed Gear
7. Thrust Washer & Locating Pin
8. Gasket
9. Input Brg. Retainer
10. Input Brg.
11. Brg. Outer Ring
12. Brg. Retaining Ring
13. Thrust Washer, Locating Pin, Lubricating Washer & Spacer
14. Intermediate (Chain Housing)
15. Drive Shaft Sprocket
16. Gasket
17. Sliding Lock Clutch
18. Rear Output Housing
19. Rear Output Front Brg.
20. Vent
21. Oil Seal
22. Oil Pump
23. Speedometer Drive Gear
24. Brg. Retainer Ring
25. Rear Output Rear Brg.
26. Rear Output Shaft
27. Washer
28. Locknut
29. Rubber Spline Seal
30. Rear Output Yoke
31. Rear Output Seal
32. Shims
33. Input Shaft "O" Ring
34. Input Shaft Pilot Bearings
35. Differential Carrier Assembly
36. Spring Washer Cup
37. Lockout Clutch Spring
38. Snap Ring
39. Snap Ring
40. Front Output Rear Brg. Cover
41. Front Output Rear Brg.
42. Front Output Drive Sprocket
43. Gasket
44. Magnet
45. Drive Chain
46. Gasket
47. Brg. Outer Ring
48. Front Output Front Brg.
49. Front Output Shaft Seal
50. Front Output Brg. Retainer
51. Rubber Spline Seal
52. Locknut
53. Front Output Yoke
54. Countergear
55. Countergear Spacers and Brgs.
56. Countergear Shaft
57. Countergear Thrust Washer
58. Gasket
59. Brg. Retainer Gasket
60. Brg. Outer Ring
61. Input Gear Brg.
62. Input Gear Seals (2)
63. Brg. Snap Ring
64. Input Gear
65. Input Gear Brg. Retainer

Fig. 1F—New Process Transfer Case - Cross Section

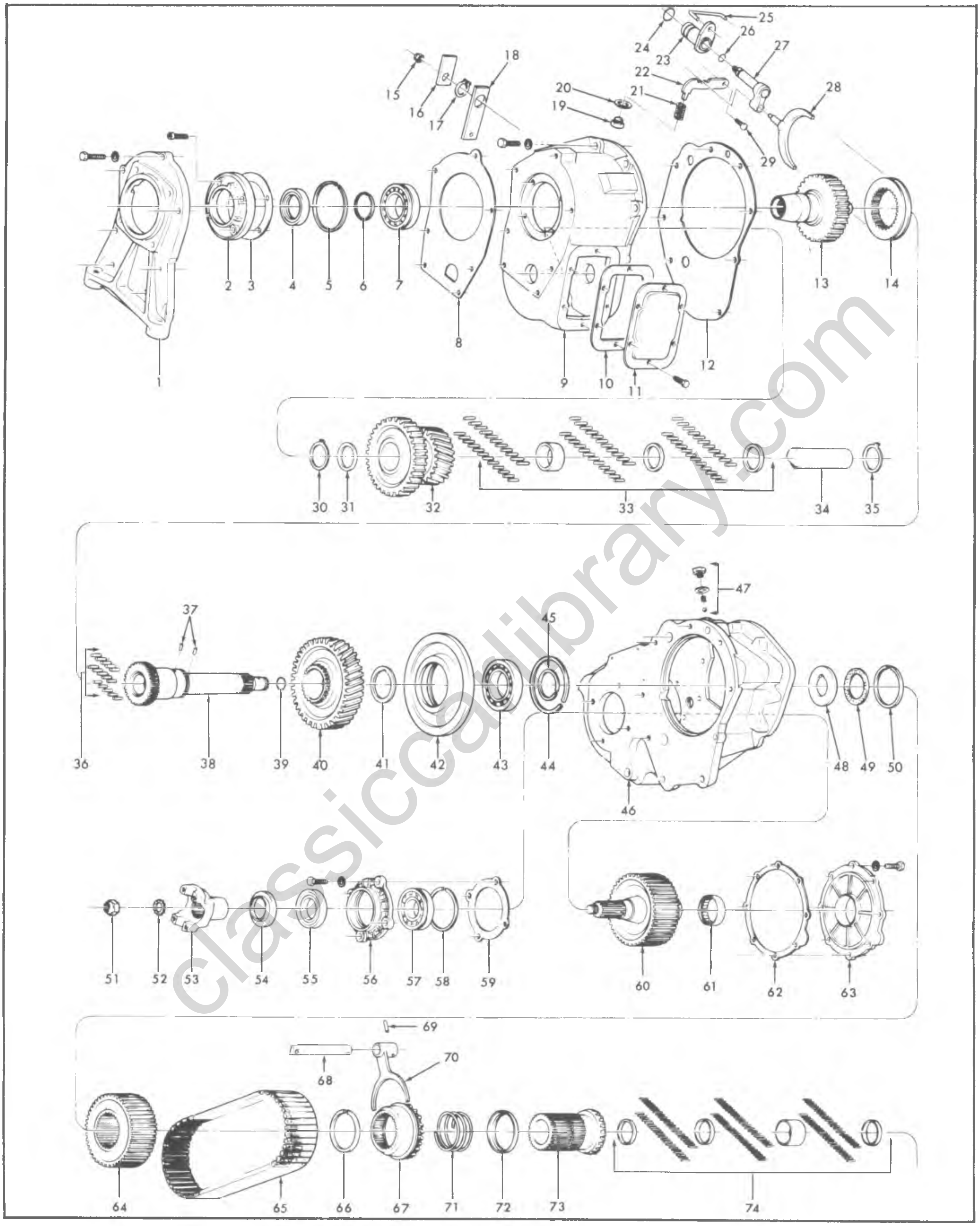
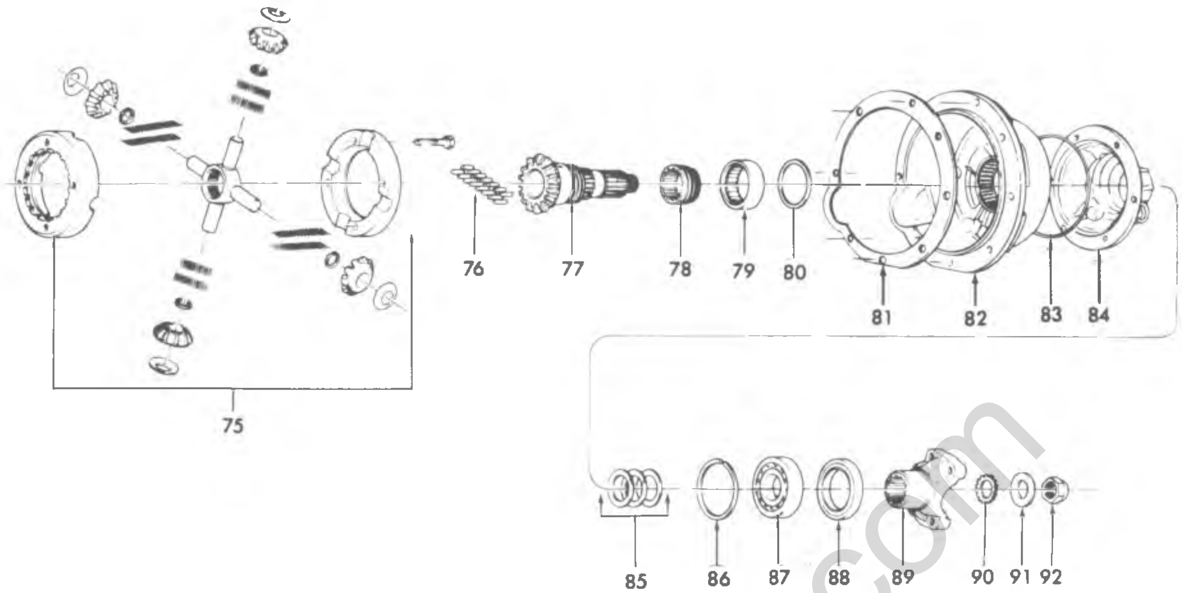


Fig. 2F-1—Transfer Case Exploded View



1. Adapter
2. Input Gear Bearing Retainer
3. Input Gear Bearing Retainer Gasket
4. Input Gear Bearing Retainer Seals
5. Bearing Outer Ring
6. Bearing to Shaft Retaining Ring
7. Input Gear Bearing
8. Adapter to Selector Housing Gasket
9. Range Selector Housing (Range Box)
10. P.T.O. Cover Gasket
11. P.T.O. Cover
12. Selector Housing to Chain Housing Gasket
13. Main Drive Input Gear
14. Range Selector Sliding Clutch
15. Shift Lever Lock Nut
16. Range Selector Shift Lever
17. Shift Lever Retaining Ring
18. Lockout Shift Lever
19. Detent Plate Spring Plug
20. Detent Plate Spring Plug Gasket
21. Detent Plate Spring
22. Detent Plate
23. Lockout Shifter Shaft
24. "O" Ring Seal
25. Lockout Shaft Connector Link
26. "O" Ring Seal
27. Range Selector Shifter Shaft
28. Range Selector Shift Fork
29. Detent Plate Pivot Pin
30. Thrust Washer
31. Spacer (short)
32. Range Selector Counter Gear
33. Countergear Roller Bearings and Spacers (72 Bearings Req'd.)
34. Countergear Shaft
35. Thrust Washer
36. Input Shaft Roller Bearings (15 Req'd.)
37. Thrust Washer Pins (2 Req'd.)
38. Input Shaft
39. "O" Ring Seal
40. Low Speed Gear and Bushing
41. Thrust Washer
42. Input Shaft Bearing Retainer
43. Input Shaft Bearing
44. Input Shaft Bearing Retaining Ring (Large)
45. Input Shaft Bearing Retaining Ring
46. Chain Drive Housing
47. Lockout Shift Rail Poppet Plug, Gasket, Spring and Ball.
48. Thrust Washer
49. Lubricating Thrust Washer
50. Retaining Ring
51. Flange Lock Nut
52. Seal
53. Front Output Yoke
54. Dust Shield
55. Front Output Shaft Bearing Retainer Seal
56. Front Output Shaft Bearing Retainer
57. Front Output Shaft Bearing
58. Bearing Outer Ring
59. Bearing Retainer Gasket
60. Front Output Shaft
61. Front Output Shaft Rear Bearing
62. Front Output Rear Bearing Retainer Cover Gasket
63. Front Output Rear Bearing Retainer
64. Drive Shaft Sprocket
65. Drive Chain
66. Retaining Ring
67. Sliding Lock Clutch
68. Lockout Shift Rail
69. Shift Fork Retaining Pin
70. Lockout Shift Fork
71. Lockout Clutch Spring
72. Spring Washer Cup
73. Front Side Gear
74. Front Side Gear Bearing and Spaces (123 Bearings Req'd.)
75. Differential Carrier Assembly (132 Bearings Req'd.)
76. Rear Output Shaft Roller Bearings (15 Req'd.)
77. Rear Output Shaft
78. Speedometer Drive Gear
79. Rear Output Shaft Front Roller Bearing
80. Oil Pump "O" Ring Seal
81. Rear Output Housing Gasket
82. Rear Output Housing (Front)
83. "O" Ring Seal
84. Rear Output Housing (Rear)
85. Shim Pack
86. Bearing Retainer
87. Rear Output Rear Bearing
88. Rear Output Shaft Seal
89. Rear Output Flange
90. Rear Output Shaft Rubber Seal
91. Washer
92. Flange Nut

Fig. 2F-2—Transfer Case Exploded View

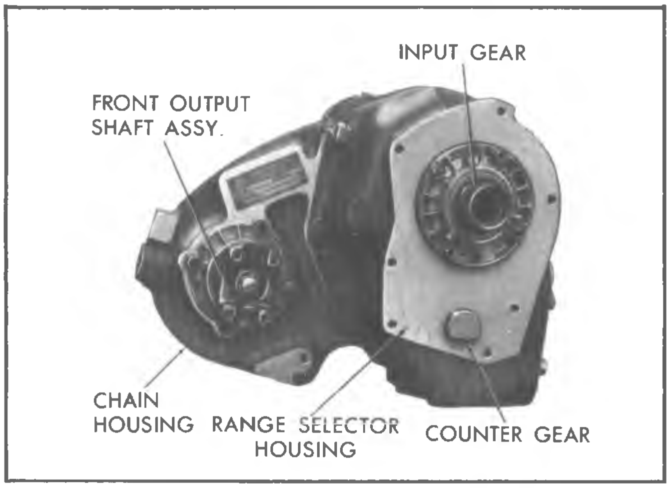


Fig. 3F—Front View of Transfer Case

11. Raise shift rail and drive out pin retaining shift fork to rail.

12. Remove shift rail poppet ball plug, gasket spring and ball from case.

    A small magnet may be used to remove ball from case.

13. Push shift rail down, lift up on lockout clutch and remove shift fork from clutch assembly.

14. Remove bolts retaining front ouput shaft rear bearing retainer to transfer case. Tap on front of shaft or carefully pry retainer away from case. Remove retainer from shaft and discard gasket. Recover any roller bearings which may fall from rear cover.

    NOTE: If necessary to replace rear bearing, support cover and press bearing from cover. Position new bearing to outside face of cover and press bearing into cover until flush with opening.

15. From lower side of case, remove (pry) output shaft front bearing.

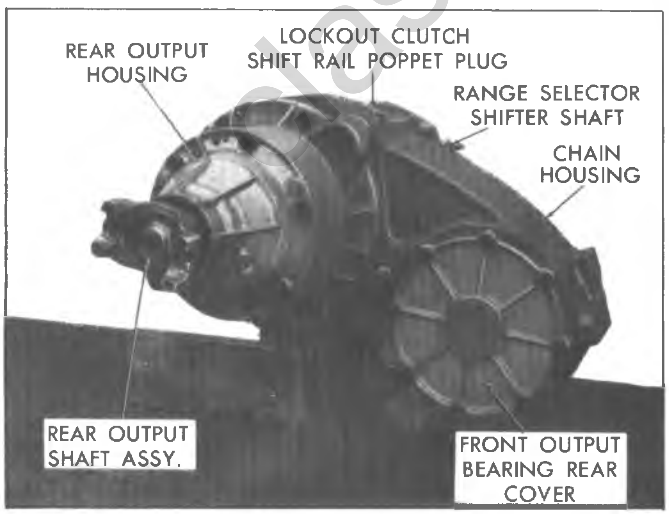


Fig. 4F—Rear View of Transfer Case

16. Disengage front output shaft from chain and remove shaft from transfer case.

17. Remove bolts attaching intermediate chain housing to range box. Lift or using a chain hoist, remove intermediate housing from range box.

18. Remove chain from intermediate housing.

19. Remove lockout clutch, drive gear and input shaft assembly from range box.

    NOTE: A 1-1/2" to 2" hose clamp may be installed on end of the input shaft to prevent loosing the roller bearings (123) which may fall out of clutch assembly if it is pulled off the input shaft.

20. Pull up on shift rail and disconnect rail from link.

21. Remove (lift) input shaft assembly from range box.

    NOTE: At this point the transfer case is completely disassembled into its subassemblies. Each of these subassemblies should then be disassembled for cleaning and inspection.

REAR OUTPUT SHAFT HOUSING (REAR) ASSEMBLY (Fig. 2F-2)

Disassembly

1. Remove speedometer driven gear from rear section of rear output housing.
2. Pry old seal out of bore, using a screwdriver or other suitable tool.
3. Using a screwdriver, pry behind open ends of snap ring and remove snap ring retaining rear bearing in housing (Fig. 5F).
4. Pull or tap bearing from housing.
5. To remove the front bearing, insert a long drift through rear opening and drive bearing from housing (Fig. 6F). Remove and discard rubber seal.

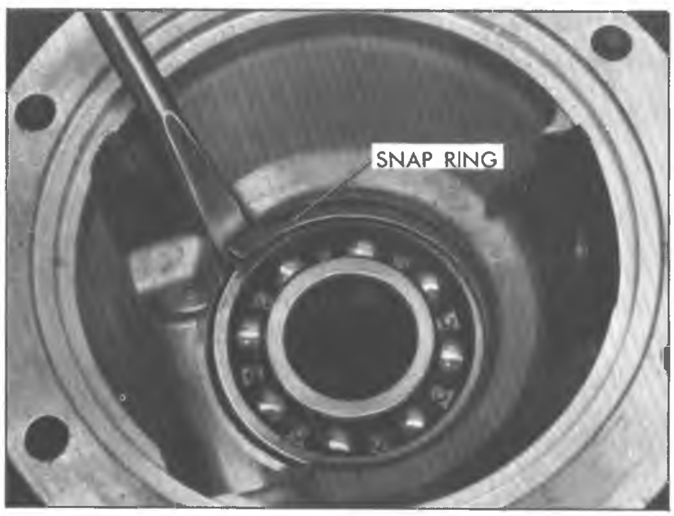


Fig. 5F—Removing Rear Output Bearing Retaining Ring

Fig. 6F—Removing Rear Output Shaft Front Bearing

Assembly

1. Position rear bearing in housing and tap into place.
2. Install snap ring retaining bearing to case.

   NOTE: Retaining Ring is a select fit. Use service ring size A, B, C or D as required to provide tightest fit.

3. Position rear seal to bore and drive into place using tool J-22388 (Fig. 7F) or other suitable tool until approximately 1/8" to 3/16" below housing face.

Fig. 7F—Installing Rear Output Housing Seal

REAR OUTPUT SHAFT HOUSING (FRONT) ASSEMBLY (Fig. 2F-2)

Disassembly

1. Remove "O" ring from rear output shaft housing (front) and discard.
2. To remove roller bearings from housing, insert a long drift through rear opening and drive bearing from housing (Fig. 6F). Remove and discard rubber seal.

Assembly

1. Position rubber seal in bearing bore. Use grease to hold in place. Position roller bearing in bore and press into place until bearing bottoms out in housing.
2. Position new "O" ring on housing.

ASSEMBLY OF TRANSFER CASE (FIGS. 1F AND 2F)

1. Place range box on blocks, with input gear side toward bench.
2. Position range box-to-transfer case housing gasket on input housing.
3. Install lockout clutch and drive sprocket assembly on the input shaft assembly.

   NOTE: A 2" band clamp may be installed on end of shaft to prevent loosing bearings from lutch assembly.

4. Install input shaft, lockout clutch and drive sprocket assembly in the range box, aligning tab on bearing retainer with notch in gasket.
5. Connect lockout clutch shift rail to the connector link and position rail in housing bore. Rotate shifter shaft lowering shift rail into the housing, to prevent the link and rail from being disconnected.
6. Install drive chain in chain housing, positioning the chain around the outer wall of the housing.
7. Install the chain housing on the range box engaging the shift rail channel of the housing to the shift rail. Position chain on the input drive sprocket.
8. Install the front output sprocket in the case, engaging the drive chain to the sprocket. Rotate clutch drive gear to assist in positioning chain on the drive sprocket.
9. Install the shift fork on the clutch assembly and the shift rail, then push the clutch assembly fully into the drive sprocket. Install roll pin retaining shift fork to shift rail.
10. Install front output shaft bearing.
11. Install front output shaft bearing retainer, gasket and retaining bolts.
12. Install the front output shaft flange, gasket, seal,

washer and retaining nut. Tap dust shield back in place after installing bolts in flange.

13. Install front output shaft rear bearing retainer, gasket and retaining bolts.

    NOTE: If rear bearing was removed, position new bearing to outside face of cover and press into cover until bearing is flush with opening.

14. Install differential carrier assembly on the input shaft. Carrier bolt heads should face rear of shaft.

15. Position rear output shaft to differential carrier assembly (load bearings in pinion shaft).

16. Install rear output housing (front) assembly, gasket, and retaining bolts.

17. Install speedometer gear and shims (approximately .050 inch thickness) on output shaft.

18. Position rear output housing (rear) assembly to rear output housing (front). Be sure "O" ring is in proper position on front section of output housing.

    NOTE: Be sure vent is in upward position.

19. Install flange, washer, and retaining nut. Leave nut loose (approximately .060 inch) until shim requirements are determined.

20. Remove dial indicator and install shim pack onto shaft, in front of rear bearing, to control end play to within 0 to .005". Hold rear flange and rotate front output shaft to check for binding of the rear output shaft.

21. Install speedometer driven gear in housing.

22. Install lockout clutch shift rail poppet ball, spring and screw plug in case.

23. Install poppet plate spring, gasket and plug, if not installed during reassembly of range box.

24. Install shift levers on the range box shifter shaft, if not left on linkage in vehicle.

25. Torque all bolts, locknuts and plugs (except filler plug) to specifications.

26. Fill transfer case to proper level with specified lubricant.

27. Install and tighten filler plug to specifications.

SECTION 9

STEERING

OVERHAUL OPERATIONS

All service overhaul procedures for 1975 Light Duty Trucks are identical to the procedures outlined in the 1974 Passenger Car and Light Duty Truck Overhaul Manual, Section 9, with the exception of the power steering pump pulley, removal and installation.

POWER STEERING PUMP

Disassembly

1. Remove pump pulley by using tool J-25034 as shown in Figure 1.

NOTE: Steps 2-15 are identical to the 1974 Passenger Car and Light Duty Truck Overhaul Manual, Section 9, Page 9-8.

Assembly

NOTE: Steps 1-19 are identical to the 1974 Passenger Car and Light Duty Truck Overhaul Manual, Section 9, Pages 9-11 and 9-12.

20. Install pump pulley by inserting tool J-25033 through pulley hub and threading the bolt into the power steering pulley shaft as shown in Figure 2.

NOTE: Pulley must be flush with end of shaft.

CAUTION: *DO NOT hammer on pump shaft. Use special tools to prevent possible damage to internal pump components. Take care to avoid nicks or scratches on pump pulley shaft.*

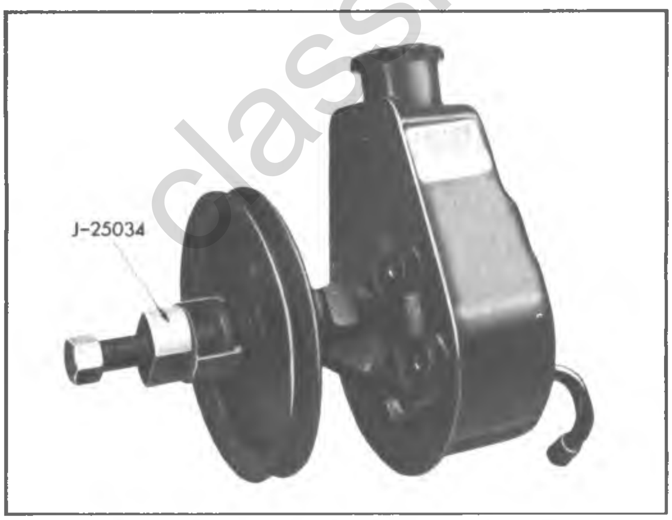


Fig. 1—Power Steering Pump Pulley—Removal

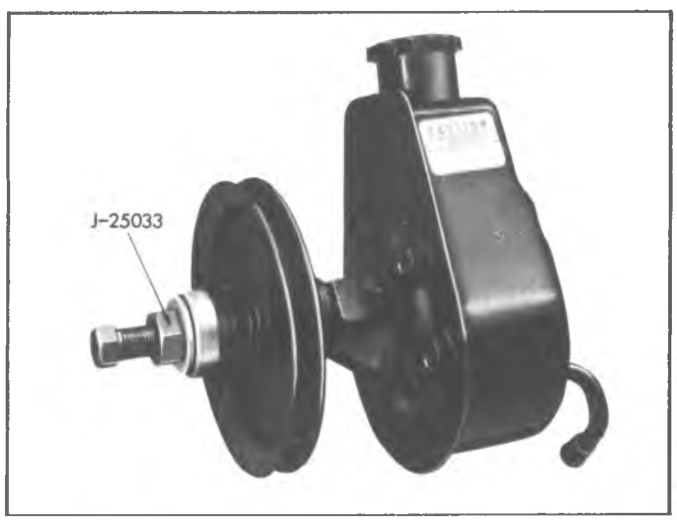


Fig. 2—Power Steering Pump Pulley Installation

SPECIFICATIONS

HEATING AND AIR CONDITIONING

SECTION 1A

HEATER

	Volts	Amps. (Cold)	RPM (Cold)
Blower Motor			
C-K Models	13.5	6.25 Max.	2550 Min. 2950 Max.
G Models	13.5	7.1 Max.	2850 Min. 3250 Max.

Fuses

C-K Models . . . . 20 Amp.
G Models . . . . 20 Amp.

AUXILIARY HEATER

	Volts	Amps. (Cold)	RPM (Cold)
Blower Motor	13.5	9.6 Max.	2700 Min.

AIR CONDITIONING

Compressor

Make	Frigidaire
Type	6 Cylinder Axial 4 Cylinder Radial
Displacement	
6 Cylinder Axial	12.6 Cu. In.
4 Cylinder Radial	10.0 Cu. In.
Rotation	Clockwise

	Volts	Amps. (Cold)	RPM (Cold)
Blower Motor			
C-K Four Season	12.0	12.8 Max.	3400 Min.
C-K-G Overhead, G Floor and Motor Home Units	12.0	13.7 Max.	3400 Min.

Compressor Clutch Coil

Ohms (at 80°F) 3.70
Amps. (at 80°F) . . . . 3.33 @ 12 volts

System Capacities

Refrigerant 12
- C-K Four-Season System . . . . 3 lbs. 12 oz.
- C-K-G Overhead Systems . . . . 5 lbs. 4 oz.
- G Model C60 System . . . . 3 lbs.
- Motor Home Chassis Unit . . . . 3 lbs. 4 oz.

525 Viscosity Compressor Oil
- 6 Cylinder Axial . . . . 10 Fluid oz.
- 4 Cylinder Radial . . . . 5.5– 6.5 Fluid oz.
- Overhead Systems . . . . 13 oz.

Torque Specifications

Compressor Suction and Discharge Connector Bolt	22 ft. lbs.
Rear Head to Shell Stud Nuts (6 Cyl.)	23 ft. lbs.
Shaft Mounting Nut (6 Cyl.)	15 ft. lbs.
Shaft Mounting Nut (4 Cyl.)	8-12 ft. lbs.
Compressor Mounting Bracket Bolts (6 Cyl.)	20 ft. lbs.
Front Bracket to Compressor Bolts (6 Cyl.)	20 ft. lbs.
Compressor Mounting Bracket Bolts (4 Cyl.)	18 ft. lbs.
Belt Tension	See Tune-Up Chart

Fuses

Fuse Block—
- C-K Systems . . . . 25 Amp.
- Motor Home Chassis Unit. . . . . 20 Amp.

In-Line—
- C-K Four-Season Systems . . . . 30 Amp.
- C-K Overhead System . . . . 20 Amp.
- Motor Home Chassis Unit . . . . None

Circuit Breaker
- G Model Systems . . . . .35 Amp.

BODY
SECTION 1B
C AND K MODELS

FRONT END

Windshield Wiper Linkage to Plenum	25 in. lb.
Sunshade Support	20 in. lb.
Inside Rear View Mirror to Bracket	45 in. lb.
Outside Rear View Mirror to Door Panel –	
Base Mirror	25 in. lb.
West Coast Mirror–Lower Bracket to Door	20 in. lb.
–Upper Bracket to Door	45 in. lb.

DOORS

Window Regulator Assembly to Door Panel	85 in. lb.
Remote Control Door Lock to Door Panel	45 in. lb.
Lock Striker to Body Pillar	45 ft. lb.
Outside Door Handle	85 in. lb.
Inside Door Handle	85 in. lb.
Hinges to Body and Door	35 ft. lb.
Front Door–Window Run Channel-to-Door	85 in. lb.
Front Door–Ventilator Assembly	
Top Vent Screw	18 in. lb.
Side Vent Screws and Spacers	25 in. lb.
Lower Vent Channel Bolts	40 in. lb.
Side Rear Door–Run Channel	
Front Upper to Door	40 in. lb.
Rear Upper to Door	20 in. lb.
Front and Rear Lower to Door	85 in. lb.
Lock Lever to Door	85 in. lb.
Rear Door–Lock Striker (06)	95 in. lb.
Rear Door–Latch L.H. and R.H. to Door (06)	85 in. lb.
Rear Door–Latch Control Assembly to Door (06)	
–Upper Assembly	85 in. lb.
–Lower Assembly	90 in. lb.
Rear Door–Weatherstrip L.H. (06)	18 in. lb.
-Check Arm	
-Strap-to-Door	45 in. lb.
-Bracket-to-Body	45 in. lb.

END GATE (14)(16)

Hinges–Body Half and Gate Half	35 ft. lb.
Support Assembly–Body to End Gate	25 ft. lb.
Torque Rod–Retainer Assembly	85 in. lb.
–Anchor Assembly	18 ft. lb.
Latch Assembly to End Gate	85 in. lb.
Latch Control Assembly to End Gate	40 in. lb.
Access Cover	18 in. lb.
Handle to Latch Control Assembly	45 in. lb.
Glass Channel Assembly to End Gate	85 in. lb.
Cap Assembly to Channel Assembly	40 in. lb.
Striker–Body Mounted	18 ft. lb.

END GATE (06)

Hinges–Hinge to Body	35 ft. lb.
–Hinge to End Gate	20 ft. lb.
Support Cable Bolts	25 ft. lb.
Torque Rod–Silencer Bracket	40 in. lb.
– End Support Bracket	90 in. lb.
Latch Assembly to End Gate	20 ft. lb.
Latch Remote Control Assembly to End Gate	40 in. lb.
Access Cover	18 in. lb.
Outside Handle	55 in. lb.
Glass Channel	45 in. lb.

TAILGATE (03, 63–with E63)

Trunnion Assembly	18 ft. lb.
Linkage and Striker Assembly–Support	25 in. lb.

TAILGATE (03, 63–with E62)

Trunnion Assembly	35 ft. lb.
Chain Support Assembly	90 in. lb.

SEATS

Front Bench Seat (03, 06, 63)	
Adjuster-to-Seat	155 in. lb.
Adjuster-to-Floor	25 ft. lb.
Front Bucket Type (14, 03)	
Driver	
Adjuster-to-Seat	18 ft. lb.
Adjuster-to-Floor	25 ft. lb.
Passenger (03)	
Support-to-Seat	18 ft. lb.
Support-to-Floor (Front)	25 ft. lb.
Support-to-Floor (Rear)	40 ft. lb.
Passenger (14)	
Latch Support-to-Seat (Rear)	18 ft. lb.
Striker-to-Floor (Rear)	25 ft. lb.
Support (Upper)-to-Seat (Front)	18 ft. lb.
Support (Lower)-to-Floor (Front)	25 ft. lb.
Support (Upper)-to-Support (Lower)	18 ft. lb.
Rear Bench (06, 14)	
Support-to-Seat	18 ft. lb.
Support-to-Floor	40 ft. lb.
Rear Bench (63)	
Support-to-Seat	150 in. lb.
Support-to-Floor	35 in. lb.
Folding Rear Seat (06)	
Support Asm-to-Floor	150 in. lb.
Seat-to-Support Asm	18 in. lb.

BODY MOUNTING (C-K MODELS)–FT. LBS.

Model	#1	#2	#3	#4	#5	#6
(03)	45	45	–	–	–	–
(06)	55	35	–	35	–	35
(14)(16)	55	45	35	35	–	–
(63)	55	35	55	–	–	–

G MODELS

MIRRORS AND SUNSHADE

Inside Rear View Mirror to Bracket . . . . 15 in. lb.
Outside Rear View Mirror to Door Panel . . . . 25 in. lb.
Sunshade Support to Header Panel . . . . 15 in. lb.

SIDE WINDOW (SWINGOUT)

Latch to Body . . . . 40 in. lb.
Latch to Glass . . . . 40 in. lb.
Hinge to Body . . . . 50 in. lb.

FRONT SIDE DOORS

Door Hinges . . . . 30 ft. lb.
Door Hinge Access Hole Cover . . . . 18 in. lb.
Door Lock Striker . . . . 45 ft. lb.
Door Lock to Door . . . . 20 ft. lb.
Outside Door Handle . . . . 45 in. lb.

REAR DOOR

Hinge Strap to Door . . . . 45 in. lb.
Hinge Strap Bracket to Body . . . . 45 in. lb.
Hinge (to body and door) . . . . 30 ft. lb.
Remote Control Retaining Screws . . . . 85 in. lb.
Latch-to-Door Retaining Screws . . . . 90 in. lb.
Door Strikers-to-Body . . . . 90 in. lb.
Outside Door Handle . . . . 45 in. lb.

SLIDING SIDE DOOR

Remote Control (front latch) to Door . . . . 90 in. lb.
Rear Latch to Door . . . . 90 in. lb.
Rear Plate to Door . . . . 90 in. lb.
Lower Front Roller and Roller Support
- Support-to-Door . . . . 24 ft. lb.
- Support to Roller Bracket . . . . 24 ft. lb.
- Roller to Roller Bracket . . . . 20 ft. lb.
- Catch to Roller Bracket . . . . 45 in. lb.

Upper Front Roller Bracket
- Bracket to Door . . . . 24 ft. lb.
- Roller to Bracket . . . . 20 ft. lb.

Upper Left Hinge (Door Half)
- Hinge to Door . . . . 25 ft. lb.

Upper Left Hinge (Body Half)
- Roller to Hinge . . . . 20 ft. lb.
- Guide Block to Hinge . . . . 40 in. lb.
- Lever Arm-to-Hinge Retaining Nut . . . . 120 in. lb.
- Lever Retaining Screw . . . . 40 in. lb.
- Striker to Body . . . . 20 ft. lb.

Rear Striker Bolt (Body Mounted) . . . . 45 ft. lb.
Front Striker Retaining Screws (Body Mounted) . . 90 in. lb.

SEATS

Seat Belt to Seat . . . . 37 ft. lb.
Passenger and Drivers
- Seat to Adjuster (Mounting Bracket) . . . . 18 ft. lb.
- Saat to Riser . . . . 18 ft. lb.
- Seat Riser-to-Floor . . . . 50 ft. lb.

Bench Seats
- Seat to Seat Support . . . . 18 ft. lb.
- Seat Support to Floor Clamps . . . . 40 ft. lb.

FRONT SUSPENSION

SECTION 3

WHEEL ALIGNMENT SPECIFICATIONS

	CASTER*										
	DIMENSION "A" IN INCHES*										
MODELS	2 1/2"	2 3/4"	3"	3 1/4"	3 1/2"	3 3/4"	4"	4 1/4"	4 1/2"	4 3/4"	5"
C10			+2°	+1 1/2	+1 1/4°	+1°	+3/4°	+1/2°	+1/4°	0°	-1/2°
C20,C30	+1 1/2°	+1 1/4°	+1°	+3/4°	+1/2°	+1/4°	0°	-1/4°	-1/2°	-3/4°	-1°
K10,K20	-4° NO ADJUSTMENT PROVISION										
G10,G20,G30	+2 1/4°	+2°	+1 1/2	+1 1/4°	+1°	+3/4°	+1/2°	+1/4°	0°	-1/4°	-1/2°
P10,P20,P30	+2 1/2°	+2 1/4°	+2°	+1 3/4	+1 1/2°	+1°	+3/4°	+1/2°	+1/4°	0°	-1/4°

CAMBER												
C10,C20,C30	+1/4°											
K10,K20	+1 1/2° NO ADJUSTMENT PROVISION											
G10,G20,G30	+1/4°											
	2 1/2"	2 3/4"	3"	3 1/4"	3 1/2"	3 3/4"	4"	4 1/4"	4 1/2"	4 3/4"	5"	5 1/4"	5 1/2"
P10	0	0	+1/4°	+1/4°	+1/4°	+1/4°	+1/4	0°	0°	0°	-1/4°	-1/2°	-3/4°
P20,P30	0	0	+1/4°	+1/4°	+1/4°	+1/4°	+1/4°	+1/4°	0°	0°	-1/4°	-1/2°	-3/4°

TOE-IN	
C10,C20,C30	3/16"
K10,K20	0
G10,G20,G30	3/16"
P10,P20,P30	3/16"

ALIGNMENT TOLERANCES			
	WARRANTY REPAIR CHECKING	RESETTING TARGET	PERIODIC MOTOR VEHICLE INSPECTION
CASTER	±1°	±1/2°	±2°
CAMBER	±3/4°	±1/2°	±1 1/2°
TOE-IN	±1/8"	±1/16"	±3/8°

*Refer to page 3-15 of the 1974 Light Duty Truck Service Manual.

FRONT SUSPENSION BOLT TORQUE (Ft. Lbs.) $

	CP-10	CP-20-30	K-All	G-10-20	G-30
Lower Control Arm Shaft U-Bolt	45	85	—	45	85
Upper Control Arm Shaft Nuts	70	105	—	70	105
Control Arm Rubber Bushings	140	—	—	140	
Upper Control Arm Bushing Steel $$		New 190 Used 115	—	w/Spacer 160 No Spacer 95	w/Spacer 190 No Spacer 115
Lower Control Arm Bushing Steel $$		New 280 Used 130	—	w/Spacer 280 No Spacer 130	w/Spacer 280 No Spacer 130
Upper Ball Joint Nut	*50	**90	**100	*50	**90
Lower Ball Joint Nut	**90	**90	***80	**90	**90
Crossmember to Side Rail	65	65	—	65	65
Crossmember to Bottom Rail	100	100	—	100	100
Crossmember Brake Support Struts		60			60
Stabilizer Bar to Control Arm	25	25	ANCHOR PLATE — 130	25	
Stabilizer Bar to Frame	25	25	55	25	
Shock Absorber Upper End	140	140	65	75	
Shock Absorber Lower End	60	60	65	75	
Brake Splash Shield to Knuckle	120 In. Lbs.	120 In. Lbs.	120 In. Lbs.	120 In. Lbs.	
Wheel Bearing Adjustment	—	—	Inner # - 35 Outer -50	—	
Wheel Bearing Preload	Zero	Zero	Zero	Zero	
Wheel Bearing End Movement	.001 - .005"	.001 - .005"	.001 - .010"	.001 - .005	
Caliper Mounting Bolt	35	35	35	35	
Spring - Front Eye Bolt	—	—	90	—	
Spring - Rear Eye Bolt	—	—	50	—	
Spring - To Rear Shackle Bolt	—	—	50	—	
Spring - To Axle U-Bolt	—	—	150	—	
Spring - Front Support to Frame	—	—	25	—	
Suspension Bumper	15	15	25	15	
Stabilizer to Spring Plate	—	—	130	—	

* Plus additional torque to align cotter pin. Not to exceed 90 ft. lbs. maximum.
** Plus additional torque to align cotter pin. Not to exceed 130 ft. lbs. maximum.
*** Plus additional torque to align cotter pin.
\# Back nut off to align cotter pin at nearest slot.
$ All specifications are given in foot pounds of Torque unless indicated otherwise.
$$ C10, G10-20 Rubber Bushings; C20-30, G30, P10-30 Steel Bushings.

FOUR WHEEL DRIVE

Axle	5500# (Dana)		Bolt Torques (Ft. Lbs.)
Gear Backlash Preferred	.004" - .009"	Carrier Cover	35
Min. and Max.	.004" - .009"	Ring Gear	110
New Pinion Bearing Preload	20-40 in. lbs.	Differential Bearing Caps	85
Used Pinion Bearing Preload	10-20 in. lbs.	Filler Plugs	10
		Drive Pinion Nut	255
		Brake – Backing Plate	35
		Axle Shaft To Hub Bolts	60

REAR SUSPENSION

SECTION 4

REAR WHEEL BEARING ADJUSTMENT SPECIFICATION

Ring Gear Size	Bearing Adjusting Nut Torque*	Adjusting Nut Back-off*	Outer Locknut Torque	Resulting Bearing Adjustment	Type of Bearing
10-1/2" and 9-3/4"	50 Ft. Lbs.	**	65 Ft. Lbs.	.001 to .010 End Play	Tapered Roller
12-1/4"	75-100 Ft. Lbs.	1/8 *	250 Ft. Lbs.	Slight Preloaded	Barrel Roller

** Back-off nut and retighten to 35 Ft. Lbs. then, back-off nut 1/4 turn.
* With wheel rotating.

Ring Gear Size	Lubricant Capacity
8-1/2"	4.2 Pints
Chevrolet 10-1/2"	5.4 Pints
Dana 10-1/2"	7.2 Pints
Dana 9-3/4	6.0 Pints
12-1/4"	14.0 Pints

UNIVERSAL JOINT ATTACHMENT TORQUE SPECIFICATIONS

Strap Attachments	15 Ft. Lbs.
"U" Bolt Attachment	20 Ft. Lbs.

DIFFERENTIAL SPECIFICATIONS

	8-1/2"	8-7/8"	10-1/2" 9-3/4" Dana	10-1/2" Chevrolet	12-1/4"
Gear Backlash Preferred	.005"-.008"	.005"-.008"	.004"-.009"	.005"-.008"	.005"-.008"
Min. and Max.	.003"-.010"	.003"-.010"	.004"-.009"	.003"-.012"	.003"-.012"
Pinion Bearing Preload (In. Lbs.) — New	15-30	20-25	20-40	25-35	
—Used	5-10	5-10	10-20	5-15	

Bolt Torques (Ft. Lbs.)

	8-1/2"	8-7/8"	10-1/2" 9-3/4" Dana	10-1/2" Chevrolet	12-1/4"
Carrier Cover	25"#	23"#	35"#	18"#	—
Ring Gear	90	50	110	110	105
Differential Bearing Caps	60	55	85	100	205

	8-1/2"	8-7/8"	10-1/2" 9-3/4" Dana	10-1/2" Chevrolet	12-1/4"
Filler Plugs	25	18	10	18	10
Differential Pinion Lock	25"#	25"#	—	—	—
Drive Pinion Nut		—	255	220	220
Differential Carrier to Axle Housing		—	—	45	85
Differential Bearing Adjusting Lock		—	—	15	15
Pinion Bearing Cage To Carrier		—	—	70	165
Thrust Pad Lock Nut		—	—	—	135
Brake - Backing Plate	40	40	105	105	155
Axle Shaft To Hub Bolts		—	90	90	15

*Initial Torque Only, Additional Torque as necessary.

TORQUE SPECIFICATIONS (FT. LBS.) (CONT'D.)

	C-K	G	P
Spring-to-Axle "U" Bolt Nuts	140	G10 120 G20 120 G30 150	P10 125 P20 125 P30 170
Leaf Spring —Front Bushing Bolt	90	135 (G316...90)	90
—Rear Shackle Bolt	90	135 (G316...90)	90
Shock Absorber —Upper Attachment	140	75	P10 25 P20 140 P30 50
—Lower Attachment	115	75	115
Propeller Shaft To Rear Axle (Strap) To Rear Axle ("U" Bolt) Bearing Support-to-Hanger Hanger-to-Frame	 12-17 18-22 20-30 40-50	 12-17 18-22 20-30 —	 12-17 18-22 20-30 —
Rear Stabilizer-to-Anchor Plate	20-30	—	20-30

BRAKES

SECTION 5
TORQUE SPECIFICATIONS

	C	K	G	P
Master Cylinder – to Dash or Booster	25 ft. lbs.			
Booster to Dash or Frame	25 ft. lbs.			
Combination Valve – Mounting Bolts	150 in. lbs.			
– Bracket to Frame	–	–	25 ft. lbs.	25 ft. lbs.
Caliper – Mounting Bolt	35 ft. lbs.			
– Support Plate to Knuckle	140 in. lbs.			
Brake Pedal – Bracket to Dash	25 ft. lbs.	25 ft. lbs.	90 in. lbs.	25 ft. lbs.
– Bracket to I.P.	25 in. lbs.	25 in. lbs.	–	–
– Pivot Bolt Nut	25 ft. lbs.	25 ft. lbs.	20 ft. lbs.	45 ft. lbs.
– Sleeve to Bracket	–	–	–	100 in. lbs.
– Stoplamp Switch Bracket	25 ft. lbs.	25 ft. lbs.	25 ft. lbs.	–
– Push Rod to Pedal	–	–	–	25 ft. lbs.
– Push Rod Adjusting Nut	–	–	–	22 ft. lbs.
Parking Brake – to Dash	100 in lbs.	100 in. lbs.	100 in. lbs.	–
– to I.P., Kick Panel or Floorpan	150 in. lbs.	150 in. lbs.	100 in. lbs.	18 ft. lbs.
– Cable Clips to Frame	150 in. lbs.	–	150 in. lbs.	150 in. lbs.
– Clip to Parking Brake	–	–	18 ft. lbs.	–
– Equalizer Nut	–	–	–	55 in. lbs.
Propshaft Parking Brake – Adjusting Nut	–	–	–	25 ft. lbs.
– Bracket to Trans.	–	–	–	20 ft. lbs.
– Cable Clip to Frame	–	–	–	150 in. lbs.
– Cable Clip to Dash	–	–	–	55 in. lbs.
– Cable Clip to Trans. Brkt.	–	–	–	20 ft. lbs.
– Flange Plate	–	–	–	30 ft. lbs.
– Drum	–	–	–	80 ft. lbs.
Wheel Cylinder to Flange Plate Bolt	50 in. lbs.			
Rear Brake Anchor Pin	140 ft. lbs.			
Front Brake Hose – to Caliper	25 ft. lbs.			
– to Frame Nut	58 in. lbs.			
– Bracket Bolt	150 in. lbs.	–	150 in. lbs.	150 in. lbs.
Rear Brake Hose – to Axle Bracket	150 in. lbs.	150 in. lbs.	90 in. lbs.	150 in. lbs.
– Bracket to Axle	150 in. lbs.	150 in. lbs.	–	150 in. lbs.
Brake Line – Attaching Nuts	150 in. lbs.			
– Retaining Clips	150 in. lbs.			
Brake Bleeder Valves	Torque to seal or 100 in. lbs. max. Replace valve if it will not seal at 100 in. lbs.			
Hydro-Boost – Pedal Rod – P30(32) Models	–	–	–	25 ft. lbs.
– Pedal Rod Boot – P30(32)Models	–	–	–	15 in. lbs.
– Pivot Lever Rod Retainer	–	–	150 in. lbs.	25 ft. lbs.
– Pivot Lever Bolt	–	–	40 ft. lbs.	40 ft. lbs.
– Booster Brackets	25 ft. lbs.	–	25 ft. lbs.	25 ft. lbs.
– Booster Brace at Dash or Rad. Supt.	–	–	150 in. lbs.	150 in. lbs.
– Accumulator Bracket	–	–	25 ft. lbs.	25 ft. lbs.
– Power Steering Pump to Booster Line	25 ft. lbs.	–	25 ft. lbs.	25 ft. lbs.
– Booster to Accumulator Line	–	–	20 ft. lbs.	20 ft. lbs.
– Booster to Gear Line	20 ft. lbs.	–	20 ft. lbs.	20 ft. lbs.
– Return Line	25 ft. lbs.	–	25 ft. lbs.	25 ft. lbs.
– Return Line Clamp Screw	15 in. lbs.	–	15 in. lbs.	15 in. lbs.
– Return Line Tee Bracket	150 in. lbs.	–	–	150 in. lbs.
– Line Clamp to Bracket Screw	125 in. lbs.	–	18 ft. lbs.	125 in. lbs.
– Line Clamp to Skirt Screw	40 in. lbs.	–	–	–

ENGINE

SECTION 6

			250	292	350	454
GENERAL DATA:						
Type			In Line		V8	
Displacement (cu. in.)			250	292	350	454
Bore			3 7/8		4	4 1/4
Stroke			3.53	4.12	3.48	4
Compression Ratio			8.25:1	8.0:1	8.5:1	8.25:1
Firing Order			1-5-3-6-2-4		1-8-4-3-6-5-7-2	
CYLINDER BORE:						
Diameter			3.8745 - 3.8775		3.9995 - 4.0025	4.2495 - 4.2525
Out of Round	Production		.0005 Max.		.001 Max	
Out of Round	Service		.002 Max.			
Taper	Production	Thrust Side	.0005 Max.			
Taper	Production	Relief Side	.0005 Max.		.001 Max.	
Taper	Service		.005 Max.			
PISTON:						
Clearance	Production		.0005-.0015	.0026-.0036	.0007-.0013	.0018-.0028
Clearance	Service		.0025 Max.	.0045 Max.	.0027 Max.	.0035 Max.
PISTON RING:						
COMPRESSION Clearance Groove	Production	Top	.0012 - .0027	.0020-.0040	.0012 - .0032	.0017 - .0032
COMPRESSION Clearance Groove	Production	2nd	.0012-.0032			
COMPRESSION Clearance Groove	Service		Hi Limit Production + .001			
COMPRESSION Gap	Production	Top	.010 - .020			
COMPRESSION Gap	Production	2nd	.010 - .020		.013 - .025	.010 - .020
COMPRESSION Gap	Service		Hi Limit Production + .01			
OIL Groove Clearance	Production		.005 Max.	.005-.0055	.002 - .007	.0005 - .0065
OIL Groove Clearance	Service		Hi Limit Production + .001			
OIL Gap	Production		.015 - .055			.010 - .030
OIL Gap	Service		Hi Limit Production + .01			
PISTON PIN:						
Diameter			.9270 - .9273			.9895 - .9898
Clearance	Production		.00015 - .00025			.00025 - .00035
Clearance	Service		.001 Max.			
Fit in Rod			.0008 - .0016 Interference			

CRANKSHAFT:							
Main Journal	Diameter		All 2.2983 - 2.2993		#1-2-3-4 2.4484 - 2.4493 #5 2.4479 - 2.4488		#1 2.7485 - 2.7494 #2-3-4 2.7481 - 2.7490 #5 2.7478 - 2.7488
Main Journal	Taper	Production	.0002 (Max.)				
Main Journal	Taper	Service	.001 (Max.)				
Main Journal	Out of Round	Production	.0002 (Max.)				
Main Journal	Out of Round	Service	.001 (Max.)				
Main Bearing Clearance	Production		All .0003 — .0029	All .0008 — .0034	#1 .0008 - .0020 #2-3-4 .0011 - .0023 #5 .0017 - .0033		#1-2-3-4 .0013 - .0025 #5 .0024 - .0040
Main Bearing Clearance	Service		#1 - .002 (Max.) All Others .0035 (Max.)				
Crankshaft End Play			.002 - .006				.006 - .010
Crank-pin	Diameter		1.999 - 1.2000	2.099 - 2.100	2.199 - 2.200		2.1985 - 2.1995
Crank-pin	Taper	Production	.0003 (Max.)				
Crank-pin	Taper	Service	.001 (Max.)				
Crank-pin	Out of Round	Production	.0002 (Max.)				
Crank-pin	Out of Round	Service	.001 (Max.)				
Rod Bearing Clearance	Production		.0007 - .0027		.0013 - .0035		.0009 - .0025
Rod Bearing Clearance	Service		.0035 (Max.)				
Rod Side Clearance			.0006 - .0017		.008 - .014		.013 - .023
CAMSHAFT:							
Lobe Lift ± .002″	Intake		.2217	.2315	.2600		.2343
Lobe Lift ± .002″	Exhaust		.2217	.2315	.2733		.2343
Journal Diameter			1.8682 - 1.8692				1.9482 -1.9492
Camshaft Runout			.0015 Max.				
Camshaft End Play			.001 - .005 (In-Line Engine)				
VALVE SYSTEM:							
Lifter			Hydraulic				
Rocker Arm Ratio			1.75:1		1.50:1		1.70:1
Valve Lash	Intake / Exhaust		One Turn Down From Zero Lash				
Face Angle (Int. & Exch.)			45°				
Seat Angle (Int. & Exh.)			46°				
Seat Runout (Int. & Exh.)			.002 (Max.)				
Seat Width	Intake		1/32 - 1/16				
Seat Width	Exhaust		1/16 - 3/32				
Stem Clearance	Produc-tion	Int.	.0010 - .0027				
Stem Clearance	Produc-tion	Exh.	.0015 - .0032		.0010 - .0027		.0012 - .0029
Stem Clearance	Service		Hi Limit Production + .001 Intake - + .002 Exhaust				
Valve Spring (Outer)	Free Length		190		Exhaust 1.91	Inlet 2.03	2.12
Valve Spring (Outer)	Pressure lbs. @ in.	Closed	55-64 @ 1.66	85-93 @ 1.69	76-84 @ 1.61	76-84 @ 1.70	74-86 @ 1.88
Valve Spring (Outer)	Pressure lbs. @ in.	Open	180-192 @ 1.27	174-184 @ 1.30	183-195 @ 1.20	194-206 @ 1.25	288-312 @ 1.38
Valve Spring (Outer)	Installed Height ± 1/32″		1-21/32	1-5/8	1-5/8	1-23/32	1-7/8
Damper	Free Length		—	1.94			1.86
Damper	Approx. # of Coils		—	4			4

TUNE-UP CHART

ENGINE	Type	In Line		V8	
	Displacement	250	292	350	454
COMPRESSION ①		130 psi		150 psi	
SPARK PLUG	Make & Number	AC-R46TX	AC-R44TX	AC-R44TX	
	Gap	.060			
DISTRIBUTOR	Timing ②	SEE IGNITION SPECIFICATIONS			
DRIVE BELT ③	Fan P/S and Air Pump	50 lb. Min 75±5 lbs. (Used)125±5 lbs.(New)Using Strand Tension Gauge			
	A/C Compressor	65 lbs. Min 95±5 lbs. (Used)140±5lbs. (New)Using Strand Tension Gauge			
AIR CLEANER ④		Refer to Section 0 of this Manual			
VALVE LASH		Hydraulic - 1 turn down from zero lash			
IDLE RPM		Refer to Exhaust Emission Tune-Up Label			
FUEL PUMP ⑤	Pressure in lbs.	3-1/2 to 4-1/2		7 to 8-1/2	
	Volume	1 pint in 30-45 seconds @ cranking speed			
CRANKCASE VENTILATION		Refer to Section 0 of this Manual			

① PSI At Cranking Speed, throttle wide open - Maximum variation, 20 PSI between cylinders.

② At idle speed with vacuum advance line disconnected and plugged. On Step Van vehicles, use number two cylinder and timing tab on bottom of cover.

③ Do not pry against A.I.R. pump housing.

④ CAUTION: In addition to its function of filtering air drawn into the engine through the carburetor, the air cleaner also acts as a flame arrestor in the event the engine backfires. Because backfiring may cause fire in the engine compartment, the air cleaner should be installed at all times unless its removal is necessary for repair or maintenance services.

⑤ Replace filter element located in carburetor inlet as indicated in Section 0 of this Manual.

ENGINE TORQUES

<table>
<tr><th rowspan="2">Size</th><th rowspan="2">Usage</th><th colspan="2">In Line</th><th>Small V-8</th><th>Mark IV V-8</th></tr>
<tr><th>250</th><th>292</th><th>262 & 350</th><th>454</th></tr>
<tr><td rowspan="8">1/4-20</td><td>Camshaft Thrust Plate</td><td colspan="2">80 lb. in.</td><td colspan="2"></td></tr>
<tr><td>Crankcase Front Cover</td><td colspan="4">80 lb. in.</td></tr>
<tr><td>Flywheel Housing Cover</td><td colspan="4">80 lb. in.</td></tr>
<tr><td>Oil Filler Bypass Valve</td><td colspan="2"></td><td colspan="2">80 lb. in.</td></tr>
<tr><td>Oil Pan (To Crankcase)</td><td colspan="3">80 lb. in.</td><td></td></tr>
<tr><td>Oil Pan (To Front Cover)</td><td colspan="2">50 lb. in.</td><td></td><td>55 lb. in.</td></tr>
<tr><td>Oil Pump Cover</td><td colspan="2">70 lb. in.</td><td colspan="2">80 lb. in.</td></tr>
<tr><td>Rocker Arm Cover</td><td colspan="3">45 lb. in.</td><td>50 lb. in.</td></tr>
<tr><td>11/32-24</td><td>Connecting Rod Cap</td><td>35 lb. ft.</td><td colspan="3"></td></tr>
<tr><td rowspan="6">5/16-18</td><td>Camshaft Sprocket</td><td colspan="2"></td><td colspan="2">20 lb. ft.</td></tr>
<tr><td>Clutch Pressure Plate</td><td>20 lb. ft.</td><td colspan="3"></td></tr>
<tr><td>Oil Pan (To Crankcase)</td><td colspan="2">75 lb. in.</td><td>65 lb. in.</td><td>135 lb. in.</td></tr>
<tr><td>Oil Pump</td><td colspan="2">115 lb. in.</td><td colspan="2"></td></tr>
<tr><td>Push Rod Cover</td><td colspan="2">50 lb. in.</td><td colspan="2"></td></tr>
<tr><td>Water Pump</td><td colspan="2">15 lb. in.</td><td colspan="2"></td></tr>
<tr><td rowspan="10">3/8-16</td><td>Clutch Pressure Plate</td><td></td><td colspan="3">35 lb. ft.</td></tr>
<tr><td>Distributor Clamp</td><td colspan="4">20 lb. ft.</td></tr>
<tr><td>Flywheel Housing</td><td colspan="4">30 lb. ft.</td></tr>
<tr><td>Manifold (Exhaust)</td><td>30 lb. ft. ②</td><td colspan="3">20 lb. ft. ①</td></tr>
<tr><td>Manifold (Exhaust to Inlet)</td><td></td><td>30 lb. ft.</td><td colspan="2"></td></tr>
<tr><td>Manifold (Inlet)</td><td colspan="2"></td><td colspan="2">30 lb. ft.</td></tr>
<tr><td>Manifold-to-head</td><td></td><td>35 lb. ft.</td><td colspan="2"></td></tr>
<tr><td>Thermostat Housing</td><td colspan="2">30 lb. ft.</td><td colspan="2"></td></tr>
<tr><td>Water Outlet</td><td colspan="4">30 lb. ft.</td></tr>
<tr><td>Water Pump</td><td colspan="2"></td><td colspan="2">30 lb. ft.</td></tr>
<tr><td>3/8-24</td><td>Connecting Rod Cap</td><td></td><td>40 lb. ft.</td><td>45 lb. ft.</td><td>50 lb. ft.</td></tr>
<tr><td rowspan="4">7/16-14</td><td>Cylinder Head</td><td colspan="2"></td><td>65 lb. ft.</td><td>80 lb. ft.</td></tr>
<tr><td>Main Bearing Cap</td><td colspan="2">65 lb. ft.</td><td>70 lb. ft.</td><td></td></tr>
<tr><td>Oil Pump</td><td colspan="2"></td><td colspan="2">65 lb. ft.</td></tr>
<tr><td>Rocker Arm Stud</td><td colspan="3"></td><td>50 lb. ft.</td></tr>
<tr><td rowspan="2">7/16-20</td><td>Flywheel</td><td>60 lb. ft.</td><td></td><td>60 lb. ft.</td><td>65 lb. ft.</td></tr>
<tr><td>Torsional Damper</td><td></td><td colspan="2">60 lb. ft.</td><td></td></tr>
<tr><td rowspan="2">1/2-13</td><td>Cylinder Head</td><td colspan="2">95 lb. ft.</td><td colspan="2"></td></tr>
<tr><td>Main Bearing Cap</td><td colspan="3"></td><td>110 lb. ft.</td></tr>
<tr><td>1/2-14</td><td>Temperature Sending Unit</td><td colspan="4">20 lb. ft.</td></tr>
<tr><td rowspan="4">1/2-20</td><td>Torsional Damper</td><td colspan="3"></td><td>85 lb. ft.</td></tr>
<tr><td>Oil Filter</td><td colspan="2">Hand Tight</td><td colspan="2">25 lb. ft.</td></tr>
<tr><td>Oil Pan Drain Plug</td><td colspan="4">20 lb. ft.</td></tr>
<tr><td>Flywheel</td><td></td><td>110 lb. ft.</td><td colspan="2"></td></tr>
<tr><td>14mm 5/8</td><td>Spark Plug</td><td colspan="4">15 lb. ft.</td></tr>
</table>

① Inside bolts on 350 engine 30 lb. ft.
② Outer bolts (Integral Head) 20 lb. ft.

CARBURETOR

SECTION 6M

IDENTIFICATION

VEHICLE				ENGINE			CARBURETOR			
							FEDERAL		CALIFORNIA	
C	K	P	G	Displace-ment and Type	RPO	BBL.	Manual	Auto.	Manual	Auto.
10	10			250 L6 L.D.	LD-4	IMV	7045003	7045002	7045303	7045302
			10	250 L6 L.D.	LD-4	IMV	7045005	7045004	7045305	7045304
20-30	20	10-20-30	20-30	292 L6 H.D.	L -25	IMV	7045008	7045008	-	-
10				350 V8 L.D.	LF-5	2GC	7045115	7045116	-	-
			10	350 V8 L.D.	LF-5	2GC	7045123	7045124	-	-
10				350 V8 L.D.	LS-9	M4MC	7045203	7045202	7045203	7045202
			10	350 V8 L.D.	LS-9	M4MC	7045219	7045218	7045219	7045218
10-20-30	10-20			350 V8 H.D.	LS-9	4MV	7045213	7045213	7045583	7045583
			20-30	350 V8 H.D.	LS-9	4MV	7045214	7045214	7045584	7045584
		30*		350 V8 H.D.	LS-9	4MV	-	7045215	-	7045585
		20-30		350 V8 H.D.	LS-9	4MV	7045216	7045216	7045586	7045586
			20-30	400 V8 H.D.	LF-4	4MV	-	7045225	-	7045588
	10-20			400 V8 H.D.	LF-4	4MV	7045229	7045229	7045589	7045589
10-20-30		30*		454 V8 H.D.	LF-8	4MV	7045212	7045212	-	-
		30		454 V8 H.D.	LF-8	4MV	-	7045217	-	-
10				454 V8 L.D.	LF-8	M4MC	-	7045220	-	-
10-20-30		30*		454 V8 H.D.	LF-8	M4MCA	-	-	7045512	7045512
		30		454 V8 H.D.	LF-8	M4MCA	-	-	-	7045517

* Motor Home

CARBURETOR ADJUSTMENTS

IMV Rochester Carburetor						
NUMBER (A) Automatic Trans. (M) Manual Trans.	Float Level	Metering Rod	Choke Rod (Fast Idle Cam)	Primary Vacuum Break	Auxiliary Vacuum Break	Unloader
7045002 (A)	11/32	.080	.260	.300	.290	.325
7045003 (M)	11/32	.080	.275	.300	.290	.325
7045004 (A)	11/32	.080	.245	.300	.150	.325
7045005(M)	11/32	.080	.275	.350	.290	.325
7045302 (A)	11/32	.080	.245	.300	.150	.275
7045303 (M)	11/32	.080	.275	.350	.170	.275
7045304 (A)	11/32	.080	.245	.300	.290	.325
7045305 (M)	11/32	.080	.275	.350	.290	.325

Note: Auxiliary Vacuum Break and Unloader are set at top of choke value.

2GC Rochester Carburetor						
NUMBER (A) Automatic Trans. (M) Manual Trans.	Float Level	Float Drop	Pump Rod	Choke Rod (Fast Idle Cam)	Vacuum Break	Unloader
7045115 (M)	21/32	31/32	1-5/8	.400	.130	.350
7045116 (A)	21/32	31/32	1-5/8	.400	.130	.350
7045123 (M)	21/32	31/32	1-5/8	.400	.130	.350
7045124(A)	21/32	31/32	1-5/8	.400	.130	.350

CARBURETOR ADJUSTMENTS - Continued

4MV Rochester Carburetor

NUMBER (A) Automatic Trans. (M) Manual Trans.	Float Level	Pump Rod *	Choke Rod (Fast Idle Cam)	Air Valve Dashpot	Air Valve Wind-Up	Vacuum Break	Unloader
7045212 (AM)	3/8	.275	.430	.015	7/16	.225	.450
7045213 (AM)	11/32	.275	.430	.015	7/8	.210	.450
7045214 (AM)	11/32	.275	.430	.015	7/8	.215	.450
7045215 (A)	11/32	.275	.430	.015	7/8	.215	.450
7045216 (AM)	11/32	.275	.430	.015	7/8	.210	.450
7045217 (A)	3/8	.275	.430	.015	7/16	.225	.450
7045225 (A)	11/32	.275	.430	.015	3/4	.200	.450
7045229 (AM)	15/32	.275	.430	.015	3/4	.200	.450
7045583 (AM)	11/32	.275	.430	.015	7/8	.230	.450
7045584 (AM)	11/32	.275	.430	.015	7/8	.230	.450
7045585 (A)	11/32	.275	.430	.015	7/8	.230	.450
7045586 (AM)	11/32	.275	.430	.015	7/8	.230	.450
7045588 (A)	11/32	.275	.430	.015	3/4	.230	.450
7045589 (AM)	11/32	.275	.430	.015	3/4	.230	.450

M4MC Rochester Carburetor

NUMBER (A) Automatic Trans. (M) Manual Trans.	Float Level	Pump Rod *	Choke Coil Lever	Choke Rod (Fast Idle Cam)	Air Valve Dashpot	Front Vacuum Break	Rear Vacuum Break	Spring Wind-up	Unloader
7045202 (A)	15/32	.275	.120	.300	.015	.180	.170	7/8	.325
7045203 (M)	15/32	.275	.120	.300	.015	.180	.170	7/8	.325
7045218 (A)	15/32	.275	.120	.325	.015	.180	.170	3/4	.325
7045219 (M)	15/32	.275	.120	.325	.015	.180	.170	3/4	.325
7045220 (A)	17/32	.275	.120	.300	.015	.200	.550	9/16	.325

M4MCA Rochester Carburetor

7045512 (AM)	17/32	.275	.120	.300	.015	.180	.550	9/16	.325
7045517 (A)	17/32	.275	.120	.300	.015	.180	.550	9/16	.325

Note: M4MC and M4MCA carburetor choke valve setting is at top of valve.

* Inner Pump Rod Location.

VEHICLE EMISSION CONTROL INFORMATION

LIGHT DUTY EMISSION VEHICLES

GM 12F13 250 CU. IN. – FEDERAL/CALIFORNIA

	TRANSMISSION Automatic	Manual
EGR-EFE-OC Exhaust Emission Control System		
Timing (° BTC @ RPM)	10° @ 550	10° @ 900
Solenoid Adj. (RPM)	550 (DR)	900 (N)
Spark Plug Gap (IN)	0.060	0.060
Fast Idle Speed (RPM)	1800 (N)	1800 (N)
Lean Drop Idle Mixture (RPM)		

GM 12J23 350 CU. IN. 2BBL – FEDERAL

	Automatic
EFE-EGR-OC Exhaust Emission Control	
Timing (° BTC @ RPM)	6° @ 600
Idle Speed (RPM)	600 (DR)
Lean Drop Idle Mixture (RPM)	650/600 (DR)
Spark Plug Gap (IN)	0.060

GM 12J43A 350 CU. IN. 4BBL FEDERAL/CALIFORNIA

	Automatic	Manual
AIR-EGR-EFE-OC Exhaust Emission Control System		
Timing (° BTC @ RPM)	6° @ 600	6° @ 800
Curb Idle Speed (RPM)	600 (DR)	800 (N)
Fast Idle Speed (RPM)	1600 (N)	1600 (N)
Spark Plug Gap (IN)	0.060	0.060
Lean Drop Idle Mixture (RPM)	650/600 (DR)	900/800 (N)

GM 12R43 454 CU. IN. – FEDERAL

	Automatic
EFE-EGR-OC Exhaust Emission Control	
Timing (° BTC @ RPM)	16° @ 650
Solenoid Adj. (RPM)	650 (DR)
Fast Idle Speed (RPM)	1000 (N)
Spark Plug Gap (IN)	0.060
Lean Drop Idle Mixture (RPM)	700/650

VEHICLE EMISSION CONTROL INFORMATION – CONTINUED

HEAVY DUTY EMISSION VEHICLES – FEDERAL

Family	Engine (CID)	Emission Control	Idle (RPM)	Spark Plug Gap (IN)	Timing (°BTC)	Lean Drop Idle Mixture (RPM)	Valve Lash
112A	292	CCS	600	0.060	8	700/600	HYD.
113	350	CCS	600	0.060	8	750/600	HYD.
113	400	CCS	700	0.060	4	770/700	HYD.
115	454	CCS	700	0.060	8	800/700	HYD.

HEAVY DUTY EMISSION VEHICLES –CALIFORNIA

Family	Engine (CID)	Emission Control	Idle (RPM)	Spark Plug Gap (IN)	Timing (°BTC)	Lean Drop Idle Mixture (RPM)	Valve Lash
113	350	AIR	700	0.060	2	800/700	HYD.
113	400	AIR	700	0.060	2	770/700	HYD.
115	454	AIR-EGR	600	0.060	8	725/600	HYD.

Note: If vehicle (350/400 cu. in. engine with heavy duty emission system only) is equipped with air conditioning, set lean drop idle mixture to specifications with air conditioning OFF and then reset idle speed to specifications with air conditioning ON.

ENGINE ELECTRICAL

SECTION 6Y

BATTERY

Model No.	Application	Cold Crank Rate	Cranking Power @0° F. (Watts)	25 Amp Reserve Capacity (Minutes)
1980199 (Y87P)	250 L-6	275A @ 0° F	2500	60
1980200 (R89P)	292 L-6. 350 V-8	350A @ 0° F	3200	80
1980204 (R89WP)	454 V-8 & RPO Option	465A @ 0° F	4000	125
1980339 (R87PT)*	RPO TP2	–	–	80
1980265 (R88SPT)**	RPO TP2	–	–	100

*C-K Truck
**G-Van

GENERATORS

Model No.	Application	Delco Remy Spec. No.	Field Current Amps (80° F) @ 12 Volts	Cold Output* Amps @ 5000 RPM	Rated Hot Output** Amps
1100497	All 250 L-6 (Base). G-Truck 292 L-6 (Base).	4519	4.4 - 9	33	37
1100560	All L-6 - with C42	4520	4.0 - 4.5	50	55
1100575	All V-8 - with C42	4520	4.0 - 4.5	50	55
1100597	All V-8 - with K76. P31832 Truck 454 V-8 (Base). G30003 Truck 350 V-8 (Base)	4522	4.0 - 4.5	55	61
1102346	All L-6 - with K79. P-Truck 292 L-6 (Base)	4521	4.0 - 4.5	38	42
1102347	All L-6 - with K76	4522	4.0 - 4.5	55	61
1102483	All C-K-G Truck (Exc G30003) V-8 (Base)	4519	4.0 - 4.5	33	37
1102493	All P-Truck (Exc P31832) V-8 (Base). All V-8 - with K79.	4521	4.0 - 4.5	38	42

*Generator temperature approximately 80°F.
** Ambient Temperature 80°F.

STARTING MOTOR

Model No.	Application	Spec. No.	Battery Size	Free Speed		
				Volts	Amperes	RPM
1108744 1108778**	250 L-6 (LD4) (C & K10)	3573	2300 Watts	9	50-80*	5500-10500
1108746 1108779**	250 K-6 (LD4) (G-Van)	3573	2300 Watts	9	50-80*	5500-10500
1108747 1108780**	292 L-6 (L25	2438	2900 Watts	9	50-80*	3500-6000
1108748 1108781**	350 & 400 V8 (LF4,LF5,LS9)	3563	2900 Watts	9	65-90*	7500-10500
1108748 1108781**	454 V8 (LF8) (Exc P30032)	3563	4000 Watts	9	65-90*	7500-10500
1108502 1108782**	454 V8 (LF8) (P30032)	3563	4000 Watts	9	65-90*	7500-10500

* Includes Solenoid
**Has "R" Terminal Removed

DISTRIBUTOR

Model No.	Application	Emiss Class	Engine Usage	Centrifugal Advance	Vacuum Advance	Initial Timing	Spark Plugs
1112863	L-6 250 (LD4)	L.D.	Federal	0° @ 1100 7° @ 2300 16° @ 4200	0° @ 4"Hg 18° @ 12"Hg	10° BTC	R46TX (.060)
1110650	L-6 250 (LD4)	L.D.	California	0° @ 1100 7° @ 2300 16° @ 4200	0° @ 4"Hg 14° @ 12"Hg	10° BTC	R46TX (.060)
1112887	L-6 292 (L25)	H.D.	Federal	0° @ 1100 14° @ 2300 24° @ 4200	0° @ 10"Hg 10° @ 13"Hg	8° BTC	R44TX (.060)
1112880	V-8 350 2 BBL (LF5)	L.D.	Federal	0° @ 1200 12° @ 2000 22° @ 4200	0° @ 4"Hg 18° @ 12" Hg	6° BTC	R44TX (.060)
	V-8 350 4 BBL (LS9)	H.D.	Nationwide				
1112888	V-8 350 4 BBL (LS9) Man Trans	L.D.	Federal	0° @ 1100 12° @ 1600 16° @ 4200	0° @ 4" Hg 18° @ 12" Hg	6° BTC	R44TX (.060)
	V-8 350 4 BBL (LS9) Auto Trans					8° BTC	
1112884	V-8 350 4 BBL (LS9)	H.D.	California	0° @ 1150 17° @ 2900 22° @ 4200	0° @ 8" Hg 10° @ 13" Hg	2° BTC	R44TX (.060)
	V-8 400 4 BBL (LF4)						
1112941	V-8 400 4 BBL (LF4)	H.D.	Federal	0° @ 1000 8° @ 1600 19° @ 3450	0° @ 8"Hg 10° @ 13"Hg	4° BTC	R44TX (.060)
1112886	V-8 454 4 BBL (LF5) w/Cat Converter	L.D.	Nationwide	0° @ 1800 12° @ 4200	0° @ 4"Hg 18° @ 7"Hg	16° BTC	R44TX (.060)
1112943	V-8 454 4 BBL (LF5) w/o Cat Converter	L.D.	Federal	0° @ 1100 11° @ 2400 18° @ 4200	0° @ 6"Hg 20° @ 15"Hg	10° BTC	R44TX (.060)
1112869	V-8 454 4 BBL (LF8)	H.D.	California	0° @ 1100 14° @ 2800 20° @ 4200	0° @ 6"Hg 20° @ 15"Hg	8° BTC	R44TX (.060)
1112494	V-8 454 4BBL (LF8)	H.D.	Federal	0° @ 1100 14° @ 2800 20° @ 4200	0° @ 10"Hg 14° @ 17 Hg	8° BTC	R44TX (.060)
1112940	V-8 350 4 BBL (LS9)	H.D	Federal	0° @ 1200 15° @ 2700 20° @ 4200	0° @ 8" Hg 15° @ 15.5"Hg	8° BTC	R44TX (.060)

CLUTCH AND MANUAL TRANSMISSION

SECTION 7M

THREE SPEED SAGINAW

Clutch Gear Retainer to Case Bolts	15 ft. lbs.
Side Cover to Case Bolts	15 ft. lbs.
Extension to Case Bolts	45 ft. lbs.
Shift Lever to Shifter Shaft Bolts	25 ft. lbs.
Lubrication Filler Plug	13 ft. lbs.
Transmission Case to Clutch Housing Bolts	75 ft. lbs.
Crossmember to Frame Nuts	25 ft. lbs.
Crossmember to Mount Bolts	40 ft. lbs.
2-3 Cross Over Shaft Bracket Retaining Nut	18 ft. lbs.
1-Rev. Swivel Attaching Bolt	20 ft. lbs.
Mount to Transmission Bolt	50 ft. lbs.

THREE SPEED MUNCIE

Clutch Gear Retainer to Case Bolts	15 ft. lbs.
Side Cover to Case Bolts	15 ft. lbs.
Extension to Case Bolts	45 ft. lbs.
Shaft Lever to Shifter Shaft Bolts	25 ft. lbs.
Lubrication Filler Plugs	13 ft. lbs.
Transmission Case to Clutch Housing Bolts	75 ft. lbs.
Crossmember to Frame Nuts	25 ft. lbs.
Crossmember to Mount Bolts	40 ft. lbs.
Transmission Drain Plug	30 ft. lbs.
2-3 Cross Over Shaft Bracket Retaining Nut	18 ft. lbs.
1-Rev. Swivel Attaching Bolt	20 ft. lbs.
Mount to Transmission Bolt	50 ft. lbs.

FOUR SPEED MUNCIE (CH 465)

Rear Bearing Retainer	23 ft. lbs.
Cover Bolts	23 ft. lbs.
Filler Plug	33 ft. lbs.
Drain Plug	33 ft. lbs.
Clutch Gear Bearing Retainer Bolts	14 ft. lbs.
Universal Joint Front Flange Nut	95 ft. lbs.
Power Take Off Cover Bolts	17 ft. lbs.
Parking Brake	22 ft. lbs.
Countergear Front Cover Screws	25 in. lbs.
Rr. Mainshaft Lock Nut (4 Whl. Drive Mdls.)	100 ft. lbs.
Transmission To Clutch Housing Bolts	75 ft. lbs.
Crossmember to Mount	40 ft. lbs.
Mount to Transmission	50 ft. lbs.

DANA TRANSFER CASE MODEL 20

Shift Rail Set Screws	15 ft. lbs.
Front Output Shaft Rear Cover Bolts	30 ft. lbs.
Front Output Shaft Front Bearing Retainer	30 ft. lbs.
Front Output Shaft Yoke Lock Nut	150 ft. lbs.
Intermediate Shaft Lock Plate Bolt	15 ft. lbs.
Rear Output Shaft Housing Bolts	30 ft. lbs.
Rear Output Shaft Yoke Lock Nuts	150 ft. lbs.
Case Bottom Cover Bolts	15 ft. lbs.
Transfer Case to Adapter Bolts	45 ft. lbs.
Transfer Case to Frame Bolts	45 ft. lbs.
Adapter Mount Bolts	25 ft. lbs.
Adapter to Transmission Bolts	45 ft. lbs.
Transfer Case Bracket to Frame Nuts (Upper)	30 ft. lbs.
Transfer Case Bracket to Frame Nuts (Lower)	65 ft. lbs.
Transfer Case Control Mounting Bolt	100 ft. lbs.

NEW PROCESS TRANSFER CASE MODEL 203

Adapter to Transfer Case Attaching Bolts	38 ft. lbs.
Adapter to Transmission Attaching Bolts	40 ft. lbs.
Transfer Case Bracket to Frame nuts (upper)	50 ft. lbs.
Transfer Case Bracket to Frame nuts (lower)	65 ft. lbs.
Transfer Case Shift Lever Attaching Nuts	25 ft. lbs.
Transfer Case Shift Lever Rod Swivel Lock Nuts	50 ft. lbs.
Transfer Case Shift Lever Locking Arm Nut	150 in. lbs.
Skid Plate Attaching Bolt Retaining Nuts	45 ft. lbs.
Crossmember Support Attaching Bolt Retaining Nut	45 ft. lbs.
Adapter Mount Bolts	25 ft. lbs.
Intermediate Case to Range Box Bolts	30 ft. lbs.
Front Output Bearing Retainer Bolts	30 ft. lbs.
Output Shaft Yoke Nuts	150 ft. lbs.
Front Output Rear Bearing Retainer Bolts	30 ft. lbs.
Differential Assembly Screws	45 ft. lbs.
Rear Output Shaft Housing	30 ft. lbs.
Poppet Ball Retainer Nut	15 ft. lbs.
Power Take Off Cover Bolts	15 ft. lbs.
Front Input Bearing Retainer Bolts	20 ft. lbs.
Filler Plug	25 ft. lbs.

AUTOMATIC TRANSMISSIONS

SECTION 7A

NEW PROCESS TRANSFER CASE MODEL 205

Idler Shaft Lock Nut	200 ft. lbs.
Idler Shaft Cover Bolts	18 ft. lbs.
Front Output Shaft Front Bearing Retainer Bolts	30 ft. lbs.
Front Output Shaft Yoke Lock Nut	200 ft. lbs.
Rear Output Shaft Bearing Retainer Bolts	30 ft. lbs.
Rear Output Shaft Housing Bolts	30 ft. lbs.
Rear Output Shaft Yoke Lock Nut	150 ft. lbs.
P.T.O. Cover Bolts	15 ft. lbs.
Front Output Shaft Rear Bearing Retainer Bolts	30 ft. lbs.
Drain and Filler Plugs	30 ft. lbs.
Transfer Case to Frame Bolts	130 ft. lbs.
Transfer Case to Adapter Bolts	25 ft. lbs.
Adapter Mount Bolts	25 ft. lbs.
Transfer Case Bracket to Frame Nuts (Upper)	30 ft. lbs.
Transfer Case Bracket to Frame Nuts (Lower)	65 ft. lbs.
Adapter to Transmission Bolts -(Manual Transmission)	22 ft. lbs.
Adapter to Transmission Bolts - (Automatic Transmission)	35 ft. lbs.
Transfer Case Control Mounting Bolt	100 ft. lbs.

TURBO HYDRA-MATIC 350

Pump Cover to Pump Body	17 ft. lbs.
Pump Assembly to Case	18-1/2 ft. lbs.
Valve Body and Support Plate	130 in. lbs.
Parking Lock Bracket	29 ft. lbs.
Oil Suction Screen	40 in. lbs.
Oil Pan to Case	130 in. lbs.
Extension to Case	25 ft. lbs.
Modulator Retainer to Case	130 in. lbs.
Inner Selector Lever to Shaft	25 ft. lbs.
Detent Valve Actuating Bracket	52 in. lbs.
Converter to Flywheel Bolts	35 ft. lbs.
Under Pan to Transmission Case	110 in. lbs.
Transmission Case to Engine	35 ft. lbs.
Oil Cooler Pipe Connectors to Transmission Case (straight pipe fitting)	25 ft. lbs.
(tapered pipe fitting)	15 ft. lbs.
Oil Cooler Pipe to Connectors	10 ft. lbs.
Detent Cable to Transmission	75 in. lbs.
Detent Cable to Carb.	112 in. lbs.

TURBO HYDRA-MATIC 400/475

Pump Cover Bolts	18 ft. lbs.
Parking Pawl Bracket Bolts	18 ft. lbs.
Center Support Bolt	23 ft. lbs.
Pump to Case Attaching Bolts	18 ft. lbs.
Extension Housing to Case Attaching Bolts	23 ft. lbs.
Rear Servo Cover Bolts	18 ft. lbs.
Detent Solenoid Bolts	7 ft. lbs.
Control Valve Body Bolts	8 ft. lbs.
Bottom Pan Attaching Screws	12 ft. lbs.
Modulator Retainer Bolt	18 ft. lbs.
Governor Cover Bolts	18 ft. lbs.
Manual Lever to Manual Shaft Nut	8 ft. lbs.
Manual Shaft to Inside Detent Lever	18 ft. lbs.
Linkage Swivel Clamp Nut	43 ft. lbs.
Converter Dust Shield Screws	93 ft. lbs.
Transmission to Engine Mounting Bolts	35 ft. lbs.
Converter to Flywheel Bolts	35 ft. lbs.
Rear Mount to Transmission Bolts	40 ft. lbs.
Rear Mount to Crossmember Bolt	40 ft. lbs.
Crossmember Mounting Bolts	25 ft. lbs.
Oil Cooler Line	10 ft. lbs.
Line Pressure Take-Off Plug	13 ft. lbs.
Strainer Retainer Bolt	10 ft. lbs.
Oil Cooler Pipe Connectors to Transmission Case	28 ft. lbs.
Oil Cooler Pipe to Connector	10 in. lbs.
Downshift Switch to Bracket	22 in. lbs.

STEERING
SECTION 9

TORQUE VALUES

Components	C10-30	K10-20	G10-30	P10-30
Tie Rod Ball Joint Nut Outer and Inner	45 lbs. ft.*	45 lbs. ft.*	45 lbs. ft.*	
Tie Rod Clamp Bolt	22 lbs. ft.			
Tie Rod Absorber Assembly		65 lbs. ft. (to Axle) 45 lbs. ft. (to Tie Rod)		
Idler Arm Mounting Bolts	30 lbs. ft.	-	30 lbs. ft.	
Idler Arm to Relay Rod Nut	60 lbs. ft.	-	70 lbs. ft.	60 lbs. ft.
Pitman Arm to Relay Rod Nut	60 lbs. ft.	-	70 lbs. ft.	60 lbs. ft.
Pitman Arm to Idler Support Arm				125 lbs. ft.
Relay Support Assembly to Frame				33 lbs. ft.
Steering Connecting Rod Nuts	-	50 lbs. ft. Plus next slot for cotter pin.		70 lbs. ft.** (Motor Home)
Steering Connecting Rod Clamps	-	40 lbs. ft.	-	
Pitman Arm to Pitman Shaft Nut	185. lbs. ft.	90 lbs. ft.	185 lbs. ft.	185 lbs. ft. 125 lbs. ft. (Motor Home)
Steering Gear Mounting Bolts	65 lbs. ft.		110 lbs. ft.	65 lbs. ft.
Steering Gear Support Reinforcement				30 lbs. ft.
Steering Wheel Nut	30 lbs. ft.		30 lbs. ft. 22lbs.ft.(Tilt)	30 lbs. ft.
Upper Steering Shaft Clamp				18 lbs. ft. (auto. trans.) 34 lbs. ft. (man. trans.)
Lower Mast Jacket Bearing Adjustment	-		.50 ± .04	1.26 ± .02
Power Steering Belt Tension	125 lbs. New - 75 lbs. Used			
Power Steering Pump	L6 18 lbs. ft. V8 25 lbs. ft.			
Pump Pressure	1200-1300 p.s.i.		G10-20 900-1000 p.s.i. G30-1200-1300 p.s.i.	1200-1300 p.s.i. Motor Home 1350-1450 p.s.i.
Pump Bracket and Support	L6 18 lbs. ft. V8 25 lbs. ft.		L6 18 lbs. ft. V8 25 lbs. ft. V8(Stud) 150 lbs. in.	
Power Steering Hose Clamp Screws	15 lbs. in.			
Power Steering Gear Hose Fittings	25 lbs. ft. (Motor Home - 165 lbs. in.)			
Power Steering Hose Clamp	150 lbs. in.			
Flexible Coupling Bolt & Studs	20 lbs. ft.			18 lbs. ft.

TORQUE VALUES (Continued)

Components	C10-30	K10-20	G10-30	P10-30
Lower Mast Jacket Bearing Clamp or Coupling Bolt	–		30 lbs. ft. (Motor Home - 48 lbs. in.)	
Lower Coupling to Wormshaft Clamp Bolt	30 lbs. ft.			75 lbs. ft.$
Column to Dash Panel Clamp Screws	–		174 lbs. in.	120 lbs. in.
Toe Panel Cover Screws	20 lbs. in.		30 lbs. in.	24 lbs. in. 42 lbs. in.(Motor Home)
Firewall Bracket Clamp Bolt	17 lbs. ft.			98 lbs. in.
Lower Bearing Adjusting Ring Bolt	–		70 lbs. in.	
Oil Cooler To Radiator Support	30 lbs. ft.			
Reservoir attaching Screws			50 lbs. in.	15 lbs. in. (Motor Home)
Reservoir Hose Clamp Screws				150 lbs. in. (Motor Home)
Reservoir Support Clamp			25 lbs. in.	

* Plus Torque Required to Aline Cotter Pin, Mac. 60 lbs. ft.
** Max. 100 lbs. ft.
$ Upper and Lower Universal Joint Clamp

MANUAL STEERING GEAR

Components	G10 - 30	C10 - 30 P10	K10 - 20	P20 - 30
Thrust Bearing Preload	6 to 11 lbs. in.	4 to 6 lbs. in.		9 to 12 lbs. in.
Adjuster Plug Lock Nut	85 lbs. ft.			
Over Center Preload	5 to 11 lbs. in.*	4 to 10 lbs. in.*		9 to 13 lbs. in.*
Over Center Lock Nut	25 lbs. ft.			
Total Steering Gear Preload	18 lbs. in. Max.	14 lbs. in. Max.		25 lbs. in. Max.

* In excess of Thrust bearing preload.

POWER STEERING GEAR

Components	All C, P, K and G
Steering Gear Ball Drag	3 lbs. in. Max.
Thrust Bearing Preload	1/2 to 2 lbs. in.*
Adjuster Plug Locknut	80 lbs. ft.
Over-Center Preload	4-5* lbs. in.
Over-Center Adjusting Screw Locknut	35 lbs. ft.
Total Steering Gear Preload	14 lbs. in. Max.

*In excess of ball drag.
**In excess of ball drag and thrust bearing preload.

STEERING GEAR RATIOS	MANUAL		POWER	
Model	Gear	Overall	Gear	Overall
G10-20	24:1	29.4:1 to 36.7:1	17.5:1	21.4:1 to 26.7:1
G30	24:1	29.4:1 to 36.4:1	17.5:1	21.4:1 to 26.5:1
P10	24:1	29.1:1 to 35.5:1	17.5:1	21.2:1 to 25.7:1
P20-30	24:1	29.1:1 to 35.3:1	17.5:1	21.2:1 to 25.7:1
Motor Home	—	—	17.5:1	20.0:1 to 27.4:1
C 10	24:1	29.1:1 to 37.0:1	16:1 to 13:1	16.9:1 to 20.2:1
C20-30	24:1	29.4:1 to 36.3:1	16:1 to 13:1	17.2:1 to 20.6:1
K10-20	24:1	24.6:1 to 28.0:1	20:1 to 16.4:1	16.7:1 to 21.5:1

STEERING COLUMN	C and K
Floor Pan Cover Screws	35 lbs. in.
Floor Pan Cover Clamp Screws	35 lbs. in.
Dash Panel Bracket to Column Screws	22 lbs. ft.
Dash Panel Bracket to Dash Nuts	20 lbs. ft.
Ignition Switch Screw	35 lbs. in.
Turn Signal Switch Screws	25 lbs. in.
Column Lock Plate Cover Screws	20 lbs. in.
Turn Signal Housing Screws	45 lbs. in.
Lock Bolt Spring Screw (Tilt Column)	35 lbs. in.
Bearing Housing Support Screws Tilt Column	60 lbs. in.
Tilt Wheel Lever	(ALL) 35 lbs. in.

WHEELS AND TIRES

SECTION 10

WHEELS

Wheel Nut Torque - 10-30 Series

SERIES	DESCRIPTION	TORQUE
K10, 15	7/16" Bolts (6)	70- 90 Ft. Lbs.
C, P10, 15	1/2" Bolts (5)	75-100 Ft. Lbs.
C, P20, 25, 30, 35 Single Wheels	9/16" Bolts (8)	90-120 Ft. Lbs.
C, P20, 25, 30, 35 Dual Wheels	9/16" Bolts (8)	110-140 Ft. Lbs.
	Heavy Duty Wheels 5/8" Bolts (10)	130-180 Ft. Lbs.

SERIES	DESCRIPTION	TORQUE
G10, 15	7/16" Bolts (6)	55- 75 Ft. Lbs.
G20, 25	1/2" Bolts (5)	75-100 Ft. Lbs.
G30, 35 Single Wheels	9/16" Bolts (8)	90-120 Ft. Lbs.
G30, 35 Dual Wheels	9/16" Bolts (8)	110-140 Ft. Lbs.

TIRES

See "Minimum Tire Inflation" and "Tire Load and Inflation Pressure" Charts in Section 10 of this Manual.

SHEET METAL

SECTION 11

TORQUE SPECIFICATIONS

	CK	G	P
Lock Support to Hood	150 in. lbs.	150 in. lbs.	
Lock Bolt Nut	30 ft. lbs.	40 ft. lbs.	
Bumper Bolt Nut	85 in. lbs.	150 in. lbs.	
Hood Hinge	35 ft. lbs.	18 ft. lbs.	
Hood Lock Catch	150 in. lbs.	18 ft. lbs.	
Hood Stop Bolt	25 ft. lbs.		
Hood Support Rod Assembly		85 ft. lbs.	
Lock Support to Rad. Support	150 in. lbs.	18 ft. lbs.	
Rad. Support to Frame	35 ft. lbs.		30 ft. lbs.
Radiator Support Bracket to Fender	50 in. lbs.		
Radiator Support to Fender	150 in. lbs.		
Rad. Grille Panel	150 in. lbs.		
Tie Bar Assembly		90 in. lbs.	
Radiator Support Cover Plate			30 in. lbs.
Fender Skirt to Fender	150 in. lbs.		150 in. lbs.
Fender to Cowl	35 ft. lbs.		
Fender Skirt to Underbody	35 ft. lbs.		
Fender Skirt Rear Support to Frame			65 in. lbs.
Rear Fender to Side Panel	92 in. lbs.		
Rear Fender Brace to Fender	150 in. lbs.		
Dual Wheel Fender to Side Panel	150 in. lbs.		
Running board, Hangers, and Braces	150 in. lbs.		

BODY AND CHASSIS ELECTRICAL

SECTION 12

LAMP BULB DATA

C-K-P TRUCK

Used in	Quantity	Trade #	Power
Dome lamps:			
Cab	1	1003	15 CP
Blazer & Suburban	1	211-1 or 211-2	12 CP
Oil pressure indicator lamp[1]	1	168	3 CP
Generator indicator lamp[1]	1	168	3 CP
Instrument cluster lamps[2]	5	168	3 CP
Headlamp beam indicator lamp	1	168	3 CP
Lamp assembly—tail & stop lamp	2	1157	3-32 CP
License lamp[4]	1	67	4 CP
Directional signal (front park lamps)[6]	2	1157	3-32 CP
Head Lamps[3]	2	6014	
Temperature Indicator Lamp	1	168	3 CP
Directional signal indicator lamp	2	168	3 CP
Cab clearance and identification lamps	4	168	3 CP
Roof marker lamps[5]	5	194	2 CP
Brake Warning Indicator	1	168	3 CP
Transmission Control	1	1445	.7 CP
Backing lamp	2	1156	32 CP
Heater or A/C	1	1445	.7 CP
Corner marker lamps	7	67	4 CP
Cargo lamp	1	1142	21 CP
Radio Dial lamp—AM	1	1816	3 CP
—AM/FM	1	216	1 CP
Cruise Control lamp	1	53	1 CP
Courtesy lamp	1	1003	15 CP
Windshield wiper switch	1	161	1 CP
Clock	1	168	3 CP
Rear Identification[7]	10	1895	2 CP
Underhood lamp	1	93	15 CP

[1]On CA, KA 10-35 instrument clusters only.
[2]3 lamps used on instrument cluster on P models or C-K w/o gauges.
[3]Double filament sealed beam 60W high beam, 50W low beam.
[4]2 lamps used with step bumper and P models.
[5]4 required on P models.
[6]1157 NA, 2.2-24 CP on C-K models.
[7]Wideside Pickup.

FUSES—CIRCUIT BREAKERS

The wiring circuits are protected from short circuits by a combination of fuses, circuit breakers, and fusible thermal links in the wiring itself. This greatly reduces the hazard of electrically caused fires in the vehicles.

The headlamp circuits are protected by a circuit breaker in the light switch. An electrical overload on the breaker will cause the lamps to go on and off, or in some cases to remain off. If this condition develops, have your wiring circuits checked immediately.

In addition to a fuse, the windshield wiper motor is also protected by a circuit breaker. If the motor overheats, due to overloading caused by heavy snow, etc., the wipers will remain stopped until the motor cools.

Fuses located in the Junction Block beneath the dash on the drivers side are:

C-K Models

- Heater, Front A/C, Generator Warning Lamp .... 20 Amp
- Idle Stop Solenoid, Aux. Battery, Radio, Time Delay Relay, Emission Control Solenoid, Transmission Downshift (M40) .... 10 Amp
- Cigarette Lighter, Clock, Dome Lamp, Cargo Lamp ..... 20 Amp
- Fuel Gauge, Brake Warning Lamp, Temperature Warning Lamp, Oil Pressure Warning Lamp .... 3 Amp
- Courtesy Lamp, Roof Marker Lamp, License Plate Lamp, Parking Lamp, Side Marker Lamp, Tail Lamp, Clearance Lamp .... 20 Amp
- Directional Signal Indicator Lamp, Stop Lamp, Traffic Hazard .... 15 Amp
- Instrument Cluster Lamp, Heater Dial Lamp, Radio Dial Lamp, Cruise Control Lamp, Windshield Wiper Switch Lamp .... 4 Amp
- Windshield Wiper/Washer .... 25 Amp
- Cruise Control, Rear Window, Aux. Fuel Tank, Tachometer, Back-Up Lamp, Directional Signal Indicator Lamp, Directional Signal Lamp, Headlamp Buzzer ... 15 Amp

P Models

- Heater†, Air Conditioning† .... 25 Amp
- Instrument Cluster Lamp, Windshield Wiper Switch Lamp .... 3 Amp
- Directional Signal Indicator Lamp, Stop Lamp, Traffic Hazard .... 15 Amp
- Fuel Gauge, Brake Warning Lamp .... 3 Amp
- Dome Lamp†, License Plate Lamp, Parking Lamp, Side Marker Lamp, Tail Lamp, Clearance Lamp, Identification Lamp .... 20 Amp
- Windshield Washer/Wiper .... 25 Amp
- Cigarette Lighter†, Clock†, Courtesy† .... 15 Amp
- Auxiliary Battery†, Back-Up Lamp .... 10 Amp
- Idle Stop Solenoid, Cruise Control†, Directional Signal Lamp, Time Delay Relay, Emission Control Solenoid, Transmission Downshift (M40) .... 10 Amp

In-line fuses are located in the ammeter and auxiliary heater circuits (C-K-P models) and underhood lamp, front and rear A/C circuits (C-K models).

†When incorporated by body builder.

Do not use fuses of higher amperage than those recommended above.

The following wiring harnesses are protected by a "fusible link" which is a special wire incorporated in the circuit: headlamp hi-beam indicator, horn and ignition circuits (C-K-P models), starter solenoid (pull-in and hold) circuit (C-K models). Should an electrical overload occur, this wire will fail and prevent damage to the major harness.

CIRCUIT BREAKERS

Device or circuit protected	Models	Amperes	Location
Headlamp and parking lamp circuit	C-K-P	15	Light switch
Windshield wiper motor	C-K	8-10	Wiper motor
Tailgate window motor	C-K	30	Engine side of dash

Section 12 (Continued)

LAMP BULB DATA

G TRUCK

Used in	Quantity	Trade #	Power
Dome lamps	2	211-1	12 CP
Oil pressure indicator lamp	1	168	3 CP
Generator indicator lamp	1	168	3 CP
Instrument cluster lamps	3	168	3 CP
Headlamp beam indicator lamp	1	168	3 CP
Tail, stop and rear directional signal lamps	2	1157	3-32 CP
License lamp	1	67	4 CP
Directional signal (front park lamps)	2	1157	3-32 CP
Head Lamps[1]	2	6014	
Temperature Indicator Lamp	1	168	3 CP
Directional signal indicator lamp	2	168	3 CP
Marker lamps	4	168	3 CP
Brake warning indicator lamp	1	168	3 CP
Back-up lamp	2	1156	32 CP
Radio dial lamp	1	1893	2 CP
Heater or A/C Control	1	1895	2 CP
Transmission Control w/Tilt Wheel	1	1445	.7 CP
Cruise control	1	53	1 CP
W/S wiper switch lamp	1	161	1 CP

[1]Double filament sealed beam 60W high beam, 50W low beam.

FUSES—CIRCUIT BREAKERS

The wiring circuits are protected from short circuits by a combination of fuses, circuit breakers, and fusible thermal links in the wiring itself. This greatly reduces the hazard of electrically caused fires in the vehicles.

The headlamp circuits are protected by a circuit breaker in the light switch. An electrical overload on the breaker will cause the lamps to go on and off, or in some cases to remain off. If this condition develops, have your wiring circuits checked immediately.

In addition to a fuse, the windshield wiper motor is also protected by a circuit breaker. If the motor overheats, due to overloading caused by heavy snow, etc. the wipers will remain stopped until the motor cools. The rear A/C is protected by a circuit breaker.

Fuses located in the Junction Block beneath the dash on the driver's side are:

Heater, A/C .... 25 amp
Idle Stop Solenoid, Cruise Control, Directional Signal Lamp, Time Delay Relay, Emission Control Solenoid, Transmission Downshift (M40) .... 15 amp
Cigarette Lighter .... 15 amp
Fuel Gauge, Brake Warning Lamp, Temperature Warning Lamp, Generator Warning Lamp, Oil Pressure Warning Lamp .... 3 amp
Directional Signal Indicator Lamp, Stop Lamp, Traffic Hazard .... 15 amp
Auxiliary Battery, Backing Lamp, Radio Dial Lamp, Radio .... 10 amp
Instrument Cluster Lamp, Heater Dial Lamp, Transmission Control Lamp with Tilt Wheel, Cruise Control Lamp, W/S Wiper Switch Lamp .... 3 amp
Dome Lamp, License Lamp, Parking Lamp, Side Marker Lamp, Tail Lamp .... 20 amp
Windshield Wiper .... 25 amp

An in-Line fuse is located in the Ammeter and the auxiliary heater circuits.

Do not use fuses of higher amperage rating than those recommended above.

The following wiring harnesses are protected by a "fusible link" which is a special wire incorporated in the circuit; ignition, horn and headlamp hi-beam indicator circuits. Should an electrical overload occur, this wire will fail and prevent damage to the major harness.

CIRCUIT BREAKERS

Device or circuit protected	Amperes	Location
Headlamp and parking lamp circuit	15 AMP	Light switch
Windshield wiper motor	8-10 AMP	Wiper motor
Rear A/C (C69 overhead)	35 AMP	Dash (forward side)

WINDSHIELD WIPERS

TWO-SPEED WIPER	
Crank Arm Speed (RPM's) (No Load)	
Lo	34 Min.
Hi	65 Min.
Current Draw, AMPS	
No Load (Lo Speed - No Linkage)	3.6
Stall (Lo Speed)	12
WASHER	
Number of "squirts" at full pressure	10
Pressure (PSI)	11-15
Coil Resistance (ohms)	6 ± 1

RADIATOR AND GRILLE

SECTION 13

TORQUE SPECIFICATIONS

	CK	G	P
Grille to Tie Bar		50 in. lbs.	
Grille	12 in. lbs.	96 in. lbs. (bolts) 50 in. lbs. (screws)	
Grille Bracket to Radiator Support	18 ft. lbs.		
Fan Shroud	50 in. lbs.	42 in. lbs.	120 in. lbs. P(32) 50 in. lbs. P(42)
Fan Guard		96 in. lbs.	
Coolant Recovery Tank Brkt.	30 in. lbs.	23 in. lbs.	28 in. lbs.
Drain Plug	112 in. lbs.	112 in. lbs.	112 in. lbs.
Hose Clamps	17 in. lbs.		18 in. lbs.
Radiator Mounting Panel	150 in. lbs.	18 ft. lbs.	150 in. lbs.
Radiator Mounting Bracket and Brace (Motor Home) — To Radiator			150 in. lbs.
Radiator Mounting Bracket and Brace (Motor Home) — To Frame			25 ft. lbs.
Radiator Support Bracket To Frame			35 ft. lbs.
Radiator Baffle		96 in. lbs.	
Radiator Baffle Seal Retainer			150 in. lbs.
Radiator Mounting Strap			150 in. lbs. (upper) 30 ft. lbs. (lower)
Filler Neck Support			85 in. lbs.
Support Bracket to Radiator support			42 in. lbs.

BUMPERS

SECTION 14

TORQUE SPECIFICATIONS C, P AND K

Front Bumper . . . . 35 ft. lbs.
Front Bumper Bracket and Brace . . . . 70 ft. lbs.
Rear Bumper to Outer Bracket . . . . 35 ft. lbs.
Rear Bumper Outer Bracket and Brace . . . . 50 ft. lbs.
License Plate Bracket . . . . 18 ft. lbs.
Gravel Deflector . . . . 85 in. lbs.
Rear Step Bumper to Bracket or Frame . . . . 40 ft. lbs.

TORQUE SPECIFICATIONS G

Front Face Bar to Bracket . . . . 24 ft. lbs.
Bracket to Cross Sill . . . . 24 ft. lbs.
License Plate Bracket to Face Bar . . . . .100 in. lbs.
Rear Face Bar to Brackets . . . . 24 ft. lbs.
Bracket to Cross Sill . . . . 24 ft. lbs.

ACCESSORIES

SECTION 15

CRUISE-MASTER

Solenoid Resistance . . . . 5 ohms ± 1/4 ohm
Solenoid Wire Resistance . . . . 40 ohms
Maximum allowable Vacuum Leakage rate for Servo unit . . . . 5 inches of Vacuum Per Minute
Not Greater than 1 inch of Vacuum per 10 seconds
Operational Test Speed . . . . 60 MPH

CHEVROLET

SERVICE